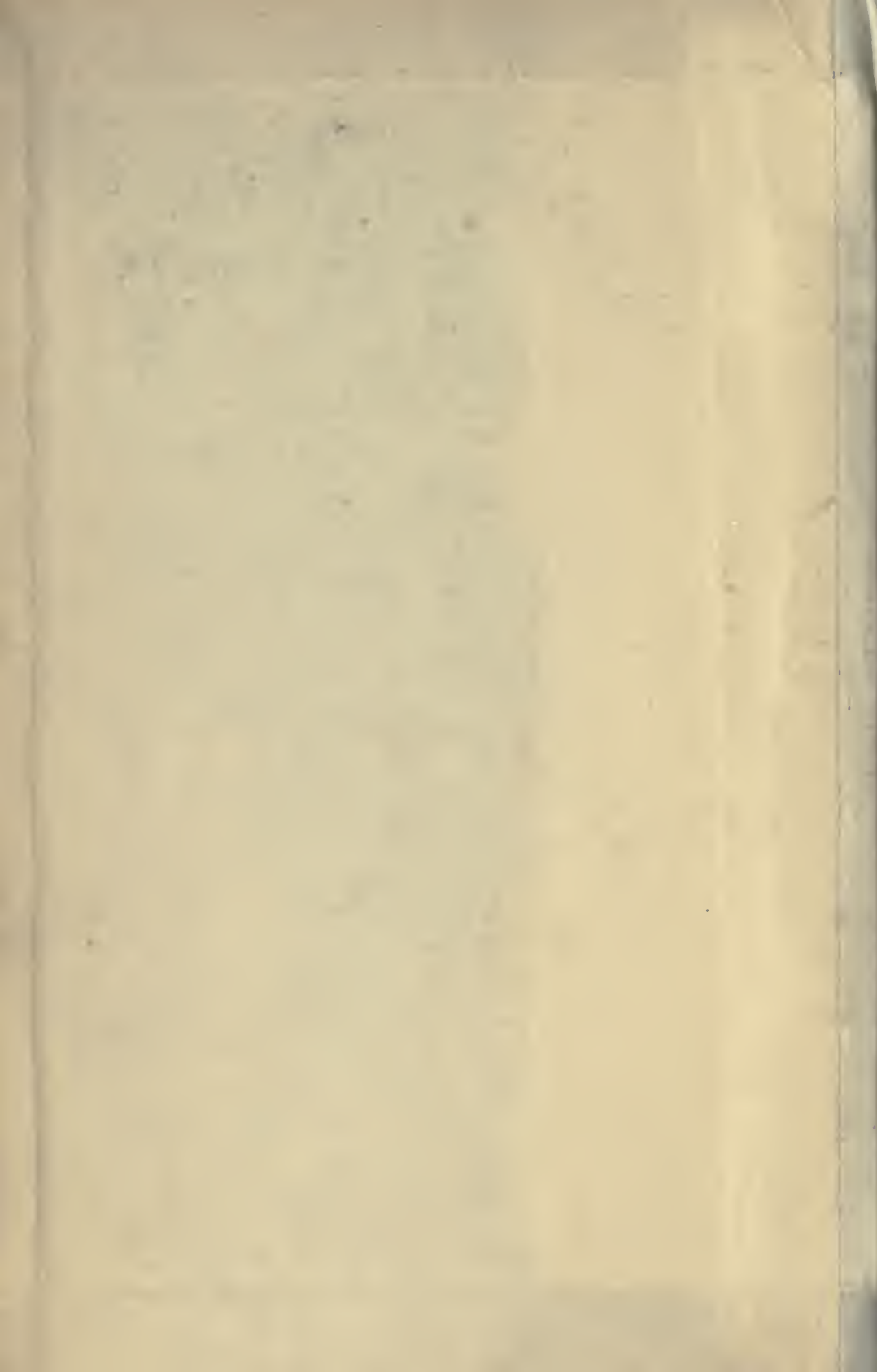


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PRAGMATISM AND THE NEW MATERIALISM

THE most striking and significant phenomenon in recent American philosophy and psychology has, manifestly, been an extensive recrudescence of materialism. To or towards this outcome have converged several theories diverse in name and, in part, in the logical considerations which have given rise to them. The tendency finds its most unequivocal expression in behaviorism, whenever behaviorism, as in the recent writings of Professor J. B. Watson, abandons the modest status of a special subdivision of psychobiology, and sets itself up as—or as a substitute for—a general psychological theory. To say that in the processes commonly known as sensation, feeling and thought nothing whatever occurs, or need be presupposed, except gross or microscopic movements of various portions of the musculature of an organism, is obviously equivalent to the reduction of the entire content and implications of experience to motions of matter and transfers of physical energy. In many of the American forms of neo-realism a scarcely less thoroughgoing materialism has been manifest, so far as the world of concrete existence is concerned; though the tendency here has been curiously conjoined with a revival of a species—a very unplatonic species—of “Platonic realism.” In most of our neo-realists, the latter seems an essentially otiose addition to their doctrine. Universals are asserted to “subsist” merely; and though subsistence is declared to be a status independent of consciousness, this independence renders it only the more alien to nature and irrelevant to experience. Since *mere* subsistents have neither date, nor place, nor causal efficacy, they are pertinent to the phenomenal order only in so far as they are embodied in particular existences; and by the neo-realist their embodiment is apparently construed in the literal sense of the word. For him too the only entities existing in time and in the causal nexus are physical masses, and—if the two be ultimately distinct—physical energy.

American pragmatism has often manifested a disposition to join forces with behaviorism and neo-realism in their campaign against the belief in the reality of psychical entities; indeed, if certain utterances of its spokesmen be considered separately—apart

from certain other utterances which to the uninitiated appear simply to contradict them—no contemporary philosophical school has given plainer expression to the materialistic doctrine. In some recent papers in this JOURNAL¹ I cited several instances of this sort; one of them it is pertinent to repeat here:

A careful inventory of our assets brings to light no such entities as those which have been placed to our credit. We do not find body and object and consciousness, but only body and object. . . . The process of intelligence is something that goes on, not in our mind, but in things. . . . Even abstract ideas do not compel the adoption of a peculiarly "spiritual" or "psychic" existence, in the form of unanalyzable meanings.²

In the papers mentioned I attempted to show, among other things, that this materialistic strain is incongruous with the most characteristic and essential thesis of pragmatism, at least in its later formulations. That thesis is to the effect that "intelligence" is efficacious and "creative." By "intelligence" the pragmatist appears to mean nothing mysterious or metaphysical; the word is for him merely a name for a familiar type of experience, that, namely, of practical reflection, of forming plans of action for dealing with specific concrete situations. This process of reflection is, he maintains, in certain cases a determinant of motions of matter, i.e., of the movements of human bodies and of other masses with which they physically interact. But upon the materialistic hypothesis practical reflection itself is nothing but a motion of matter; if "bodies and (physical) objects" are the only factors involved in "intelligence," it should be possible to describe the phenomenon called "planning" wholly in physical terms—i.e., in terms of masses actually existing, of positions actually occupied, of molar or molecular movements actually occurring, *at the time when the planning is taking place*. The laws of that class of physical processes called "practical judgments" may, of course, be unique, incapable of reduction to the laws of physics or chemistry; and pragmatism declares that they are in fact thus unique and irreducible. But the things whose behavior these laws describe must—if the pragmatist is to avoid psychophysical dualism—consist solely of real parts of the material world.

Now since "intelligence," in the pragmatist's sense, is an observable and analyzable phenomenon, the question whether any entities are involved in it which are *not* real parts of the material world is a question of empirical fact, to be settled by analysis of the specific type of experience under consideration. And in my previous papers I sought to show that this question must be answered

¹ Vol. XVII, pp. 589-596 and 622-632, 1920.

² Professor B. H. Bode, in *Creative Intelligence*, pp. 254-5, 245.

in the affirmative. A plan of action, as I pointed out, obviously requires the presentation of both past and possible future states or contents of some part of the material world. But a past or possible future state of the material world is not, at the moment at which it is represented in the experience of the planner, a part of the real material world. The content of my memories or of my expectations, as such, would find no place in any inventory of then existing "bodies and objects" which would be drawn up even by a perfected physical science. It is of the very essence of the planning-experience that it is cognizant of and concerned with things, or configurations of things, which have yet to be physically realized, and are therefore not yet physically real. Thus in fixing his attention especially upon "intelligence" in its practical aspect, the pragmatist is brought face to face with that type of experience in which the empirical presence of non-physical entities and processes is, perhaps, more plainly evident than in any other.

This fact, it may be remarked parenthetically, is the reason why I have thought it useful to select pragmatism as the immediate point of attack in a critical examination of the new materialism in general. The pragmatists have rendered a service to philosophers of all schools by directing attention to the significance of certain undeniably real aspects of the cognitive experience, which happen also to be the best possible touchstone for the determination of the issue between those who assert and those who deny the existence of psychical or immaterial entities. That issue has hitherto been discussed mainly in connection with the problem of perception; with that problem, in fact, the neo-realists seem to have been somewhat obsessed. The believer in the presence of distinctively mental factors in the cognitive situation has not failed to meet the issue on this the favorite ground of his adversary. But in this part of the field the controversy, if not logically indecisive, has at any rate grown somewhat tedious and repetitious. There remains, meanwhile, a region of experience in which the dispute seems capable of being brought more speedily to a decisive conclusion; and it is with this region that the pragmatist is especially preoccupied. He is primarily interested, not in the question how we can know an external, coexistent object, but in the question how one moment of experience can know and prepare for another moment. It is, in short, to what I have elsewhere named *intertemporal cognitions* that his analysis is devoted; it is by man's habit of looking before and after that he is chiefly impressed. Now to look before and after is—as my previous papers pointed out—to behold the physically non-existent; it is to possess as data in experience objects

which can not be conceived to be simultaneously present in the material universe. Since, moreover, the pragmatist affirms the potency of intelligence, that is to say, of this function of foresight and recall, in the causation of (some) physical events, his philosophy, if consistently worked out, should lead him to an interactionist view upon the psychophysical problem.

Such, in brief, was the argument previously set forth. To that argument Professor Bode has very courteously replied in an article in this JOURNAL.³ Certain phases, I will not say of pragmatism, but of the opinions and doctrinal affinities of pragmatists, are greatly illuminated by his paper, which is, moreover, manifestly inspired by a genuinely philosophic desire to cooperate in an endeavor to promote a common understanding. Nevertheless—such are the difficulties of philosophical discussion!—even this most generous and fair-minded of critics has apparently altogether overlooked the principal point of my argument; and the reasonings which he presents appear to me to be not only inconclusive, but almost wholly irrelevant to the particular issue upon which I had hoped to focus attention. Yet they are apparently believed by their author to controvert the conclusions I defended; and it seems needful, therefore, to examine carefully the chief considerations which Professor Bode contributes to the discussion.

1. A great part of his reply is devoted to an explanation of what the pragmatist means by "consciousness." He is not disposed wholly to reject this term; he too is ready to formulate, in his own way, a "differentia of the psychic" and a criterion "which makes it possible to draw a sharp line between conscious and mechanical behavior." This, of course, is of much interest in itself; but it has no pertinency to the reasons for affirming the existence of "psychical" entities which were presented in my paper. To say that for the instrumentalist "consciousness is identifiable with" such and such a "type of behavior," is equivalent to the two propositions (1) that by the word "consciousness" the instrumentalist means the defined type of behavior; (2) that such a type of behavior is empirically discoverable. The first, being a verbal proposition, requires no proof. The second is a proposition of fact and therefore subject to verification. But its truth might be conceded without the least logical detriment to the considerations which I had advanced. For I have not questioned the pragmatist's right to define the word "consciousness" as he likes; I have not denied that the "peculiar type of behavior" to which Professor Bode prefers to apply that name is a fact of experience; and I have not

³ Vol. XVIII, 1921, pp. 10-17.

maintained that this type of behavior affords evidence that "mental entities," in my sense of the term, exist. What I have maintained is that there is *also* found in human experience a phenomenon differing in certain important respects from that which Professor Bode describes; and that this does afford evidence of the existence of mental entities. This other sort of experience, exemplified in planning and all forms of practical reflection, is what I had supposed the pragmatist to mean by "intelligence"; but I am less interested in ascertaining the pragmatic name for the thing than in pointing out that the thing is a fact. Throughout most of his paper, then, Professor Bode, instead of looking at the evidence offered for this conclusion, which he ostensibly rejects, appears to fix his gaze upon another object altogether. Let me show this in detail by outlining more specifically the pragmatic account of "consciousness," as set forth by him. The pragmatist observes that some stimuli are of a "peculiar kind," *i.e.*, have specific characteristics which others lack. For example, a noise in some cases has, in addition to the "various properties or qualities that are appropriate subject-matter for the physicist, a further trait or quality" of which the physicist takes no cognizance. This further trait is, it appears, an "elusive" one, difficult to express in words; but its nature is indicated by such expressions as "an indescribable 'what-is-it' quality," an "inherent incompleteness." When a noise possesses, besides its mere noisiness, this special and unique quality, it "causes the individual concerned to cock his ear, to turn his eyes, perhaps to step to the window in order to ascertain the meaning of the noise." Stimuli (a term which is for Bode apparently synonymous with complexes of sensible qualities) are, then, said to be "conscious" if they have this peculiarity; and "consciousness" is a name for the "function of a quality in giving direction to behavior." The conscious stimulus, in other words, is differentiated by its tendency "to set on foot activities which are directed towards getting a better stimulus." The word "directed" here, however, must not be understood to imply any representation of the better stimulus *as* future; for a reaction possesses the "psychical" character "irrespective of any explicit reference to the future." There need be no actual anticipation, of the "conceptual" sort. Any case of organic response which exhibits the phenomenon of trial-and-error would apparently exemplify "conscious" behavior, in the pragmatist's sense; in fact I can not see that there is any kind of actual response which would not correspond to the definition.

There are—it may be observed incidentally—some inconveni-

ences in using the words "psychical," "mental," *etc.*, in this manner. One of them is that "psychical" apparently does not exclude "physical." If I understand Bode's language, a real physical object would also be a "psychical existence" whenever it "set on foot activities directed towards getting a better stimulus." It is also a somewhat confusing feature of this usage that the adjectives "conscious," "psychical," *etc.*, seem applicable both to stimuli and to the bodily behavior which the stimuli evoke, though it is difficult to see how they can be attached to both substantives univocally.

This, however, is by the way. What I wish to point out is that my argument rested entirely upon an analysis of the particular kind of reaction in which there is an "explicit reference to the future"—in which actual foresight is an essential feature of the experience. By transferring the adjective "psychical" to a kind of reaction defined as lacking this feature, Professor Bode does not answer that argument; he simply ignores it. Is it a fact that explicit reference to the future sometimes occurs, that when we form a plan of action unrealized possibilities are present as such to our thought? Or again, is it a fact that when we think of such unrealized concrete possibilities we have present in thought objects which can not be regarded as parts of the present content of the material world? Only by answering the first of these questions in the negative, or, if that were answered affirmatively, then by answering the second in the negative, could Bode join issue with the reasoning actually contained in the papers upon which he comments. A radical behaviorist, I suppose, would answer one or the other of these questions with an unequivocal negative. But it is not clear from Professor Bode's article that he shares the behaviorist's fine *a priori* contempt for the facts of experience.

2. There is, however, a further aspect of the pragmatist's conception of "conscious behavior" which is not fully brought out in the summary above given; and this we must now examine, since it is this aspect chiefly which makes it clear "why instrumentalism is so reluctant to bring in mental states or psychic existences." (The latter expression is presumably here used in the sense defined in my previous papers; for Professor Bode has just told us that in another sense, pragmatism itself recognizes psychic existences.)

The argument, if I have understood it, rests upon a distinctive thesis about the attributes of "objects." The pragmatist, it would seem, holds that what are usually called the effects of a stimulus upon an organism should properly be called "parts" of the stimulus, or attributes of the object (for Bode apparently uses the two

terms interchangeably). In the case of a noise which causes a dog to cock his ear, the attribute of causing-ear-cocking, "by which the present stimulus makes provision for its own successor," is designated in pragmatist terminology the "incompleteness" of the present stimulus; and this "incompleteness is intrinsic to the stimulus, or inherent in it"; in other words, it is "as much a part of the noise as any of its other traits." Since the behavior resulting, or capable of resulting, from a given stimulus is thus read back into the stimulus itself, and since the stimulus in turn is identified with physical objects (and, in the case of perception, apparently with *the* physical object perceived), there results for the pragmatist a radical revision of the conception of physical objects. "Traditional theory" has been wont to regard such an object as "characterized by stark rigidity and close-clipped edges"; to the pragmatist, on the contrary, it seems to be a soft and plastic entity with boundaries so wide that almost anything might be found within them. The notion of the "inherent properties of an object" is thus so enlarged as to include either (Bode does not seem to me to be clear here) all organic responses which the object's presence ever evokes, or, at any rate, an inherent *tendency* to evoke whatever responses in fact occur when it is present. Physical objects are consequently things which can control behavior directly, by virtue of their own nature and attributes; and it therefore becomes unnecessary to introduce mental entities in the explanation of behavior, in man or other animals. "The emphasis shifts inevitably from mental states in the traditional sense to this peculiar type of control as exercised by *objects*."⁴ It is precisely because pragmatism has become aware of "this distinctive character of the stimulus" that it "can not afford to give countenance to entities or existences the chief purpose of which," as it seems to Professor Bode, is to obscure this character—to "translate it into mechanical equivalents."

To judge of the pertinency of this reasoning it is needful to recall once more—however wearisome the repetition—the precise argument against which it is supposed to be directed. That argument, it will be remembered, (a) dealt exclusively with the evidence for the existence of non-physical entities to be found *in a particular phase of human experience, viz.,* in intelligent planning, involving an explicit representation of things past and future; (b) used the expressions "psychical" or "non-physical entity" *in a specific and clearly defined sense, viz.,* as meaning "an entity not assignable to real space and to the complex of matter and forces recognized by

⁴ *Op. cit.*, p. 15; italics in original.

the physical sciences, at the moment at which the entity is actually present in experience." The reasoning offered as the principal reply to this argument (a) still wholly ignores the specific type of experience to which the argument related. It offers, not an analysis of anticipation and memory, but an analysis of sensory stimulation. I ask the pragmatist about "intelligence," and am given a description of responses for which no intelligence is requisite. I ask what precisely it is that happens when an architect plans a building, or when an engineer endeavors to analyze the causes of the collapse of the St. Lawrence bridge several years ago; Professor Bode replies by telling me what it is that happens when a dog cocks his ear. As described, moreover, "conscious behavior" is not distinguishable from the kind of phenomenon which occurs when a phototropic plant is touched by a ray of light. In the case of the plant also the initial stimulus "makes provision for its own successor" and "sets on foot activities directed towards getting a better stimulus." (b) With respect to the question, irrelevant to my argument, with which Bode's reply is actually concerned, his conclusion is reached by a series of partly explicit and partly tacit alterations in the meanings of terms. He first includes the adaptive motor-responses to a sensation among the "traits" of the sense-datum itself; he next tacitly identifies the sense-datum ("the noise as heard") with the "stimulus" (which in the ordinary use of terms means, in the case of audition, the air wave set up by the vibration of an elastic body); he then identifies the stimulus with the "object"—presumably the object from which it proceeds, e.g., an automobile-horn. By this process of freely substituting one meaning for another, it is assuredly not difficult to prove that the dog's cocking his ear is merely an instance of "the control of behavior by objects." But the entire argument is of an essentially verbal character; and the first two steps in it—the identification of responses with sense-data, and of sense-data with external stimuli—beg the only question to which the argument can be said to be directed. For that question is whether sensory content is totally identical with either the stimulus or the physical state of the sensory nerves; and whether the stimulation passes over into a motor response without the generation or interposition, anywhere in the process, of any factor which is not "physical" in the ordinary sense, previously defined. That is a question of fact which is hardly to be settled by the short and easy method of defining physical objects *ab initio* as having an inherent *virtus excitativa* sufficient of itself to account for behavior.

What might at first be taken for a further distinct argument

against psychophysical dualism and interactionism is suggested by Professor Bode's repeated remark that those doctrines imply a "mechanistic" conception of behavior. "Unless we abandon the category of interactionism we are back on the level of mechanistic naturalism, from which the position of instrumentalism is intended to provide a means of escape." But it is obvious that the adjective must here be used in some peculiar sense; for nothing is more alien to "mechanistic naturalism," as that designation is usually understood, than the doctrine that non-physical entities or processes can affect the movements of bodies. When, then, we seek to determine precisely what Bode means by "mechanistic," we find that the word apparently denotes any view which regards as incorrect or insufficient the account of the "distinctive nature of conscious behavior" given by the pragmatist. "Mechanical behavior," in short, is expressly antithetic to "conscious behavior," in the pragmatist's sense; and "conscious behavior" in his sense means, as we have seen, behavior controlled by physical objects directly, by virtue of their "inherent incompleteness"—this last expression, in turn, meaning a capacity to initiate in an organism (without the intervention of any other factors) a series of adaptive responses. In brief, the charge that psychological interactionism is "mechanistic" means, when translated, that that doctrine affirms the presence and efficacy of factors other than physical objects in at least some modes of human behavior. The charge, in short, is that interactionism is—interactionism. There is here, therefore, no argument which seems to demand separate discussion.

3. After having, through nearly all of his article, vigorously assailed the belief in mental or psychical entities (in my sense of the terms), Professor Bode in his penultimate paragraph suddenly and surprisingly utters a profession of faith in the creed which he had seemed to be attacking. "We need not," he writes, "take serious exception to Lovejoy's contention that concepts are 'mental entities,' in the sense that they may be 'actually given . . . but can not be regarded as forming a part, at the same moment, of the complex of masses and forces, in a single public space, which constitutes the world of physical science.' That concepts exist in some form and that there is a discernible difference between them and physical objects is an indubitable fact." These "concepts," moreover, are functional. "They function in much the same way as physical objects;" they "control behavior." Here, it will be observed, it is explicitly in the sense which I had given to "mental" that Professor Bode grants the reality of mental entities. He adds, it is true, that "the important issue is not whether concepts exist,

but whether the classification of them as 'mental' is to be made to accord with the foregoing (*i.e.*, the pragmatic) theory of conscious behavior." This might be taken to mean that, after all, he regards concepts as "mental" solely in the pragmatic sense, not in the sense given in the definition which he quotes from my paper. But to construe his meaning thus would be to imply that he denies in one sentence what he had affirmed two sentences before; and no such interpretation, happily, is necessary. For a "concept"—*e.g.*, a representation of a building yet to be erected—may be "mental" *both* in the sense expressed by my definition and in a sense which includes at least the distinctive positive differentia of the "psychical" in the pragmatic definition. A non-physical factor in experience may—and if it be efficacious, must—*function* like any other stimulus. The idea of the house to be built will necessarily have what Bode calls an "unfinished quality;" it too will be "directed towards the end of completing the present incompleteness." But its possession of this character does not alter the fact that, unlike other possible varieties of "psychical" stimuli—in the pragmatic meaning of the term—it consists in a representation of a future object, and is therefore "psychical" in another sense, a sense which excludes it from the class of physical things, *i.e.*, of things belonging to the objective spatial system.

Professor Bode, then, though he has elsewhere represented the psychical as merely a special variety of the physical, now seems to tell us plainly (*a*) that there are two distinct classes of factors in our experience, "physical objects" and "mental entities;" (*b*) that both are efficacious in the causation of physical changes. These two propositions taken together seem to constitute the plainest possible affirmation of psychophysical dualism and interactionism—as, I take it, those terms are commonly understood. Yet the same passage concludes: "There is no ground for Lovejoy's contention that, if concepts are admitted to their legitimate place, it follows that, rightly construed and consistently thought through, pragmatism means interactionism." Here I must confess myself baffled. How this conclusion is to be reconciled with the admissions which immediately precede it, I am unable to conjecture. I therefore can not feel that Professor Bode has succeeded in making his position, or that of pragmatists in general, unmistakably clear. After careful study of his paper, I remain in some doubt whether he holds that pragmatism implies materialism or not.

It still seems to me desirable, however, that the matter should be made clear, and that pragmatists (not to speak of others) should actually give some consideration to the reasons offered in support

of the view that the pragmatic doctrine of the efficacy of intelligence properly implies psychophysical dualism and interactionism. And in the hope that Professor Bode himself, or others of the same way of thinking, may again deal with the subject, I venture, by way of conclusion and résumé, to set down a few questions to which I think it would be illuminating to have clear answers. (1) Does the pragmatist hold that only physical things exist, *i.e.*, that they alone are disclosed by, or present as factors in, experience ("physical" meaning "occupying a position in objective space and existing as a part of the sum of masses and forces dealt with by physical science")? (2) Is it not a fact that in the formation of intelligent plans of action there are involved both "imaginative recovery of the bygone" and imaginative anticipation of objects and situations not yet physically realized? (3) If so, can every bit of the content presented in the two types of experience just mentioned be regarded as forming a real part of the physical world, as constituted at the moment of such experience? (4) If so, *where* in that world, and in what form or manner, does the "bygone" that is "imaginatively recovered," or the future that is not yet realized, exist? (5) If it does exist physically at the moment of the experience in question, precisely what is meant by calling it "bygone" or "future"? To the last four of these questions I can not but think that all partisans of the new materialism might profitably address themselves.

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A PARTIAL ANALYSIS OF FAITH

BELIEVING with Eucken, James, Bergson, and other philosophers of like mind, that faith plays a very vital part in the lives of us all, it has nevertheless been a mystery above other mysteries to me when I attempted seriously to describe it, analyze it, and classify it. A multiplicity of questions have arisen, some of which have become so defined that an answer seems at least worth while seeking. Some of them are: What is the function of faith, what does it contribute to the happiness or the achievements of mankind? What is the attitude of mind, what the emotions, what the nature of the contents which go to make up the faith states? Is it something that grows within us by exercise and cultivation as the perceiving and reasoning processes do? Does it correspond to something outside of us, or is it entirely subjective, something within us?

A first difficulty with the problem lies in the fact that few of us

ever attain, or but seldom attain, to the pure faith states, and the element of faith in our everyday life is so intermingled with other elements in the stream of consciousness, that it is difficult to isolate it for purposes of introspection. However the present writer through stress of much illness and suffering has come to a certain practise of faith and thereby to a certain understanding of it as practised by others, which yields a degree of actual comfort and logical satisfaction.

We all know what faith means, an acceptance of that which has never been proven and may be impossible of proving. Its first and most fundamental characteristic seems to be the attitude which consciousness assumes toward any matter. This attitude, so far as the present introspectionist is concerned, refuses to be subsumed under any of the classes of attention as described in the present day psychologies, and seems so radically different that to posit a class of attitudes entirely opposite to those of attention offers the best chances for clear analysis, at least for the present. Now ordinarily, we meet the common situations of life in an attitude of attention, with the responses acquired by imitation, habit, or reasoning. We depend on ourselves, on our past experiences as known to consciousness in remembering, for these responses and receive stimuli and carry out reactions, with fluctuations of attention as to kind and degree. Consciousness, or surface consciousness, goes on in an uninterrupted flow. But a new situation arises or an old one becomes intolerable with which one feels unable to cope. No amount of thinking carried on with the utmost concentration of attention seems to avail. A man with faith habits then suspends all efforts and waits for an inspiration or guiding thought to come; if from within, we call it auto-suggestion or intuition; if from another, it is called suggestion; if it appears to come from a divine source, it is prayer or an answer to prayer.

Now the general nature of what the individual does is the same in all cases. He drops the attitude of attention, stops the thinking going on under the dominance of a controlling idea with carefully selected associations. He assumes a waiting or expectant attitude in throwing open his mind as it were in the belief that a suitable idea or thought will appear to fill the existing vacancy. The common expressions such as "I was at my wits' end when all at once I had a lucky thought," or, "I was in despair when suddenly an inspiration came," illustrate one type of response of the first sort, namely, the appeal, perhaps unconscious, to something within one, other than the surface stream of thought, call it the subconscious, or what you will. The second sort of response, or suggestion, is found when peo-

ple go to the confessional, to clairvoyants, or resort to some stereotyped form of response such as fortune telling by cards, opening a book at random and being guided by the first words read. Young children appeal to parents or other adults in this way and if a proper spirit is cultivated in the family the different members appeal to one another in this fashion and exemplify as nothing else does the *raison d'être* of family life. The third response, appeal to a Divine Power, is of course prayer, epitomized in the Gethsemane utterance, "Not my will, but Thine be done." It betokens the inhibition of the dominant thought in the fullest degree, and the most complete submission to whatever may come from the outside, or from within, as one accepts the transcendent or the immanent idea of God.

The term expectancy is by no means new in philosophical writings. Ribot has used it in his *Evolution of General Ideas*, saying that to simple association expectancy must be added before reasoning takes place.¹ Consciousness must assume the expectant attitude in order for the ideas to take on the correct relationship which is necessary in the processes called reasoning. James uses the word repeatedly in his essay, "The Sentiment of Rationality," without giving it any very specific meaning other than a general state of mind when uncertainty in regard to future events beyond our control is present, as for example in the following. "The permanent presence of the sense of futurity in the mind has been strangely ignored by most writers, but the fact is that our consciousness at a given moment is never free from the ingredient of expectancy."² Or again: "An ultimate datum, even though it be logically unrationalized, will, if its quality is such as to define expectancy, be peacefully accepted by the mind."³ Whether one is justified in using the word to describe or name a fundamental attitude of the mind different from attention is another matter. If such a class exists, I know of no other word so appropriate unless it be that of waiting, and while very appropriate for some of this class, yet it carries with it too much the idea of passivity, while expectancy denotes an eager looking forward, a quality which caused the poet to write of faith as a "living flame." On the other hand "waiting stillness" is very much used by the mystics to describe the quiet confident repose of the soul in deepest meditation. The expression "waiting on the Lord" is especially frequent in the writings of the Hebrew psalmists: "I waited for the Lord, He inclined unto me," "My soul doth wait upon the Lord."

When we come to consider the content of faith we can only say

¹ Ribot, *Evolution of General Ideas*, p. 25.

² James, *Essays in Popular Philosophy*, p. 77.

³ *Ibid.*, p. 79.

that any thing whose outcome lies in the future may constitute an object of faith, but the universal and persistent content of faith has to do with the welfare of the individual soul, now and hereafter, with salvation and immortality; with the existence and purposes of God, the Universal Soul, as it were; with the relationships of one soul to another and to God; in short, those things regarding which our logical concepts and laws seem inadequate and whose future we can not forecast with any demonstrable certainty. With many people the welfare of the body is also in a peculiar manner the substance of faith and all sorts of people assert the efficacy of faith in the cure of physical ills. That faith in the cure of physical ills and in the cure of sin is in its essential features the same thing from a psychological standpoint, the writer has tried to show in a former article.⁴ This view receives strong confirmation in an essay by a Catholic Father of Oxford who finds that the directions given by St. Ignatius several centuries ago for practising spiritual exercises are the same, *mutatis mutandis*, as those given by the modern mental healer for physical cure. Taking psychoanalysis as an example of mental psychotherapeutics which has the highest claim to being scientific he says: "Psychoanalysis is based on the principle that there is a subconscious self which can do things which we can not do voluntarily and seeks by means of suggestion to utilise the subconscious machinery. Substitute for the subconscious self, God, and you have the fundamental principle of the Spiritual Exercises."⁵

But these subjects mentioned above have from time immemorial formed the subject matter for intellectual speculation and scientific experimentation, and reams upon reams have been written offering proofs concerning truths accepted at that time, none of which have been able to stand the test of newer facts and experiences. How is it then that faith can handle these same matters and make them active forces in the lives of individuals? In his Essay, "The Will to Believe," James makes this statement: "In truths dependent on our personal actions, then, faith based on desire is certainly a lawful and possibly an indispensable thing."⁶ I believe that faith is always based on desire, but for the matter of that so is willing, but with a difference. Desire is a state of consciousness which terminates in judgments, decisions, and acts, provided a will or action complex can be found to complete the desire satisfactorily to consciousness as a whole. If none such presents itself in the stream of consciousness,

⁴ "A Glimpse into Mysticism and the Faith State." This JOURNAL, Vol. XVII, pp. 708-715, Dec. 16, 1920.

⁵ Walker, "The Spiritual Exercises of St. Ignatius," *Hib. Jour.*, April, 1921.

⁶ P. 25.

then the desire falls below the threshold and exists as unexpressed desire—vague and undetermined as to outcome and in many cases the cause of a disturbed emotional state. If thwarted or incomplete desires in regard to a certain matter are many, that is, if consciousness continues to find no satisfactory completion of the desires, a state of inadequacy appears, consciousness inhibits itself, throws wide the gates which guard the threshold so carefully in the process of remembering in a state of attention, and assumes a state of expectancy. Into the void thus formed, springs the desire with all the weight of accumulation with the same action complex which before could not force its way into the stream of thought or at least not with enough strength to bring a decision. The impulses and desires, weak as regards the dominant lines of thought and action, prevail when they have brought about a state of uneasiness which leads to the inhibiting of these dominant lines.

Perhaps we find the best example of this in religious conversion. Underneath the many failures were the impulses, the strivings, the desire to do better which ultimately brought about a state of repentance, and prevailing over the old dominating line of action, culminated in a new state of consciousness which is called the new birth in Christian teaching. It is the bringing of consciousness to higher levels in the terminology of Eucken, which reorganization he ascribes to the mercy of God, to free grace. Personally, I too believe that God reënforces these designs; that He is an active force in us, sublimating the "natural desires" and motivating our weaker but higher ideals and aspirations. Of this, of course I offer no logical proof, but only add my testimony to that of others who live and act by the same faith.

Prayer is the generally accepted mental process of faith and is undeniably based on desire. In the words of the familiar hymn, "Prayer is the soul's sincere desire, unuttered or expressed." St. Augustine's admonition, "for to journey thither [towards God], nay even to arrive there is nothing else but the will to go," forms the nucleus of an interesting story of modern life, giving a psychologically true account of the transition of a weary restless soul to a joyous peacefulness though the strength of her desire.⁷ Again the Hebrew psalmist has expressed the thought so perfectly. "Rest in the Lord, wait patiently for him; Delight thyself also in the Lord and he shall give thee thy heart's desire."

Faith healing of the body follows in the main the same procedure, as said before. First, all mental therapists and indeed all practitioners recognize the need of the desire for health. A lady

⁷ Montague, "The Will to Go," *Atlantic Mo.*, May, 1921.

who had been insane for some time once expressed the wish to a visiting friend that she might recover and leave the hospital. This was reported to the head physician, who replied that there was then a chance of her recovery, and she did recover. The Christian Scientists teach their patients to desire health, to think health, and to believe health is coming. It is difficult, in the present state of knowledge regarding the interaction of the mind and the body, to say why this is necessary. In general one may say that probably the normal functioning of the body depends on the proper distribution of nerve energy to the different organs and parts of the body. In certain cases, especially chronic ones, the mind seems in some way to have played a part in the altering of the course of the nerve currents and by a different mode of thinking can help to restore normality. Fear has an inhibitory and generally harmful effect on bodily functions, and hope and confidence have a helpful one. Psychologists by method of psychical analysis believe they have discovered that certain people take refuge in illness to escape some situation they fear. The removal of the fear constitutes the main factor in the cure, and physical and mental energy flow again in natural channels. All suggestion, from auto-suggestion to hypnotism, is based on the principle of the inhibition of the stream of consciousness and on the attitude of readiness to receive a new content. This content must, as we have said, be based on desire and as most people desire health very ardently, however much they may fear a certain situation to which they are called upon to react, mental cures are very often easily effected.

Dr. Prince has set forth this theory very clearly in the following paragraphs as regards the new thought processes and his emotion is equivalent to our idea of desire. "By similar procedures in a very large number of instances, for therapeutic purposes, *I have changed the setting, the viewpoint, and the meaning of ideas without any realization on the patients' part of the reason for the change.* This is the goal of psychotherapy, and in my judgment the one fundamental principle common to all technical methods of such treatments, different as these methods appear to be when superficially considered.

"It is obvious that in everyday life when by arguments, persuasion, suggestion, punishment, exhortation, or prayer *we change the viewpoint* of a person, we do so by building up complexes which shall act as settings and give new meanings to his ideas. I may add, if we wish to sway him, to carry this new viewpoint to fulfillment through action we introduce into the complex an emotion which by the driving force of its impulses shall carry the ideas to practical fruition."

Again he says: "With excitation of emotion, instincts and sentiments which have opposing conative tendencies are inhibited, repressed, or dissociated and with them the systems with which they are organized."^s Here again we read desire, which I believe to be the basis of most if not all emotions. The desire changes the direction of thought, when consciousness is open, expectant.

The general feeling tone of faith is excitement-repose, running the gamut from the highest ecstasy and pure joy to deep peace and the waiting stillness. The factor which brings emotions of this class is apparently the oneness of the individual and the source from which the desire is to be realized. Brahmanism teaches that the highest bliss is complete absorption in the Nirvana. The author of the fourteenth chapter of the gospel of St. John sums up the teaching on the unity of God and man in the following expression: "I am in the Father and ye in me, and I in you." This is to bring the highest satisfaction and the greatest power. James says that this is the appeal in all movements which have meant much to humanity, *i.e.*, kinship or oneness.

"If we survey the field of history and ask what feature all great periods of revival, of expansion of the human mind, display in common, we shall find I think, simply this: that each and all of them have said to the human being. 'The inmost nature of the reality is congenial to powers which you possess.'"⁹

All this contains an important lesson for religious propaganda. That concept of God has the strongest appeal which makes the worshipper feel that he is akin to God or that God is akin to him. The strong appeal of Christianity is that the tie or relationship between God and man is love of such a nature that it defines expectancy and removes all doubts as to the future outcome of events, therefore bringing the satisfaction and peace sought. To disbelieve in a God who has this intimate relationship to us seems the acme of evil or sin from the standpoint of this religion, the greatest disloyalty to life itself. To believe in such a God is an essential factor in salvation and the highest service man has in his power to render to himself, to others and to the universe and its God. Love is the culmination of faith.

The feeling of kinship, commonly called rapport, is likewise of the utmost importance in all physical cures where faith plays a part. It is the consensus of opinion among psychoanalysts that cure by their method is only possible where the rapport exists. One of them at least believes that the establishing of this bond is sometimes sufficient to effect the cure without the analysis. A

^s Morton Prince, *The Unconscious*, pp. 368-9, p. 500.

⁹ *Op. cit.*, p. 86.

Christian Science healer told me that she could not help anyone who was antagonistic to her and that she believed this was the common experience of all healers. A well known medical writer after describing the rather elaborate Weir Mitchell rest cure, concludes that the good results sometimes attained are chiefly brought about by the suggestive influence of the physician and that the main effect of the treatment is mental, much depending on the personality of the physician and on the individuality of the patient. I do not entirely agree with this, but certain it is that a feeling of close fellowship brings about a state of mental and physical relaxation essential to the healing of the body and to the redirection of nerve energy.

What is the function and value of faith in human life can be pretty well made out from the foregoing. Religious writings of all times and places abound in stories of men whose lives have been changed and reinvigorated by repentance and consequent acts of faith. It means either a tapping of our own reserves of energy or the drawing upon the sources of divine energy. "They that wait upon the Lord shall renew their strength." Everyone has the option of believing that which harmonizes best with his own experience. History will show, I believe, that the men who have most influenced the race through the force of their personality have been men who were great practisers of prayer, or else had a strong belief in destiny. One who believes in destiny is one who takes some sort of an appeal to the dispenser of fate in such a way that he is confident of his own powers of accomplishment and hence undertakes and carries through tremendous tasks. Likewise we have found it to be a restorer of physical power and health. Just as we found repentance necessary for spiritual rebirth, so we find relaxation necessary for bodily renewal. Some physician has said: "The primary effect of relaxation is weakness, stupor, numbness and death-like paralysis; the secondary effect, however, is increased strength and new life."

The important question, the practical question in the whole matter is, are the faith processes something common to all, or is there a class of people who have the gift of faith as some have the gift of music or art? It is peculiar to some people, no doubt, to excel in the exercise of faith, but if our reasoning has been correct, we can all cultivate it in the measure that our individual lives call for it. First of all, we must have desire to realize an ideal; it is the first step in the faith process. Desire is a mental process which can not either be completely rationalized or find expression in will processes. Hence its importance in consciousness is overlooked but

it is the first step in all other processes, speaking broadly. In the case of faith, the desires are those which enter into the stream of consciousness and begin to function as a part of it, without being completely rationalized or motivated. And herein lies the danger of faith: that one gives the reins to desire without waiting for a reasonable outcome to be forecasted, when such an outcome is within the possibilities of reason. It is this abuse of faith which has brought it into discredit. Faith should only be called into play where strong desire exists and reason fails.

Secondly to attain an effectual faith, one must cultivate harmony within oneself, a sort of rapport between the subconscious and the surface consciousness, so that the forces of both work together in greater power than either alone could possess. Mystics and healers alike emphasize this need of harmony, the absence of any distracting thought which might draw off energy in a useless and harmful expenditure. A physician in speaking of the over-reaction of certain patients to incoming stimuli of all kinds, says: "Such patients are consequently in a state of perpetual mental unrest. . . . Nervous energy is being wasted at a terrific rate in all directions."¹⁰ Another physician speaks of the conservation and direction of energy, saying: "In the well developed individual the distribution of energy through widening of the symbol, the 'soul' or spiritual development has left the proper amount of functioning, of energy carriage, on any one of them."¹¹

In the same way, if one is to exercise faith by way of suggestion for the benefit of another, one must practise removing all antagonism between the suggestionist and the one who is to profit thereby. The cultivation of a spirit of love and kindness is the cardinal teaching of the great religions and they abound in precepts and admonitions for doing this. The only general principle that comes to mind that would be of aid in this, is the recognition of kinship with one's fellow men as spoken of above, the abolition of all class and racial distinction where moral matters are concerned. Spiritual faith seems to rest, by the same law, on the recognition of the identity of one's desire and purpose with those of the God of the universe.

The third rule for the attainment of faith is that one is to become skillful in inhibiting the stream of thought, in the power of relaxing, in reaching monoideism, by a process of letting go all ideas in consciousness in order for the one coming from another source to

¹⁰ Bryant, "Treatment of The Chronic Intestinal Invalid," *Am. Jour. of The Med. Soc.*, Jan. 1921, p. 72.

¹¹ Jelliffe, "Multiple Sclerosis and Psychoanalysis," *Am. Jour. of The Med. Soc.*, May, 1921, p. 672.

hold its place in the focus of a new consciousness. A similar relaxation of the body is a help in this. The celebrated Reverend Dr. T——, the first and greatest successor of Moody, once told a small group of listeners that he often spent the night in prayer lying prone, which is the attitude of greatest bodily relaxation. Medical men are coming to realize the function of physical relaxation in restorative processes. One of them says that relaxation for nervousness may be like diet or hygienic measures in gastro-intestinal disorders, and that doing away with residual tension is the *sine qua non* of thorough and successful treatment. "So in certain chronic cases, relaxation becomes a gradual progress, a matter of habit formation, wherein the presence of pain or disordered intestinal secretions or other organic disturbances may completely block the way."¹²

In a word, while we shall never rationalize the supreme and persistent content of our highest faith, we do rationalize much of the humbler sort. We shall never understand the great geniuses of faith any more than we do the great geniuses in music or philosophy, but we may by faithful effort learn something of its laws as we do those of memory or judgment, and in a small way grow in the knowledge and practise thereof.

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BOOK REVIEWS

The Psychology of the Special Senses and their Functional Disorders. ARTHUR F. HURST. (The Croonian Lectures.) Oxford University Press. 1920. Pp. 122.

The title of this book is somewhat misleading, as it deals almost entirely with functional disorders of the special senses. There is an introductory chapter on the nature of hysteria, followed by chapters on disturbances of the special senses, especially of touch, pain, hearing and vision. These disturbances are in the nature of anæsthesias and hyperæsthesias.

All sensory experiences are considered as active processes, as "reactions" of the individual, rather than as the mere passive reception of stimuli. In the absence of this active process, the state of attention, no impressions will produce sensory experiences. In order to hear, one must listen; in order to see, one must look. This active process has its physiological basis in synaptic changes in the afferent neural pathways; attention is lowered resistance, absence of atten-

¹² Jacobus, "Reduction of Nervous Irritability and Excitement through Progressive Relaxation," *Jour. of Nervous and Mental Diseases*, April, 1921, p. 284.

tion is increased resistance. Any condition which will increase attention to a group of sensory stimuli may produce hyperæsthesia, and any condition which will decrease attention will produce lowered sensitivity or even anæsthesia.

Now suggestion is a very potent factor in producing these changes and is made responsible for all of the functional sensory disorders. Hysteria is defined as a "condition in which symptoms are present which have resulted from suggestion and are curable by psychotherapy" (p. 5). Many of the supposedly fixed stigmata of hysteria such as the anæsthesias and the restricted visual fields are suggested unintentionally by the examining physician. The patient being led by the technique of the examination and by leading questions to believe that certain conditions are present, *e.g.* anæsthesias, fails to pay further attention to their sensory stimuli. The uniformity of the symptoms in different cases is attributed to the uniformity of examination methods with the consequent similar heterosuggestion. The hysterical phenomena which are not the direct effect of heterosuggestion are the result of autosuggestion following organic disabilities. Thus a soldier deafened by a shell explosion may believe that he is permanently deafened, and will no longer *listen*. Hence he may remain deaf after all organic disturbance has ceased.

By forced attention to the pain of wounds, the patient may become so accustomed to "look for" the pain that he may feel it long after the wound has completely healed. Here the sensory experiences are the result of greatly lowered synaptic resistance.

Upon the foregoing conception of hysteria the author with his associates has effected many cures of functional disorders among the soldiers. A group of case histories is presented to illustrate each type of hysterical symptom. The most effective treatment, where the intelligence of the patient permits, consists of a simple and clear explanation of the facts of suggestion, with a course of training in the active process of *listening, looking, and feeling*.

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JOURNALS AND NEW BOOKS

SCIENTIA. August, 1921. *De la contribution des divers pays au développement de la chimie* (pp. 85-102): B. L. VANZETTI (Padua).—A well-written sketch of a complex history, with insistence on its international character. *The Relation of Light Emission and Absorption to Atomic Structure* (pp. 103-114): E. P. LEWIS (California).—A notable effort to put in brief and simple

form the tangled and still highly problematic current conceptions of the structure of atoms. The result is a paper well worth careful perusal. *Le problème de l'intégration physiologique* (pp. 115-126): C. M. CHILD (Chicago).—Restates the author's well-known opinions. The chemically most active region of an organism tends to dominate the rest, because of the influences which that chemical activity sends out. Dominance and subordination can thus be chemically explained and quantitatively studied. *Problèmes financiers d'après guerre. III. D'un nouveau principe de progressivité pour les impôts de succession* (pp. 127-144): CORRADO GINI (Padua).—An interesting detailed and critical study of the proposal to tax inheritances more severely in proportion to the number of generations through which the heritage has descended. In the present financial crisis, the author recommends heavy taxes on such capital as is not due to the labor and savings of the present owner, and likewise on consumption which is beyond what is necessary for efficiency. *Reviews of Scientific Books and Periodicals.*

Bruhn, Wilhelm. *Glauben and Wissen*. Leipzig and Berlin: B. G. Teubner. 1921. Pp. 108. Kart. 30c; geb. 35c.

Dilthey, Wilhelm. *Die Jugendgeschichte Hegels, und Andere Abhandlungen zur Geschichte des Deutschen Idealismus. Gesamelte Schriften. Band IV*. Leipzig: B. G. Teubner. 1921. Pp. x + 583. \$2.05, geheftet; \$2.25, gebunden.

W. Dilthey, A. Riehl, W. Wundt, H. Ebbinghaus, R. Eucken, Br. Bauch, Th. Litt, M. Geiger, T. K. Oesterreich. *Systematische Philosophie*. Edited by Paul Hinneberg. Third, revised edition. Leipzig: B. G. Teubner. 1921. Pp. x + 408.

Hartman, Nicolai. *Grundzüge einer Metaphysik der Erkenntnis*. Berlin and Leipzig: Walter de Gruyter & Co. 1921. Pp. xii + 389.

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NOTES AND NEWS

ÉMILE BOUTROUX

Émile Boutroux died in Paris on November 22 at the age of seventy-six years. This simple announcement came as a shock to the many academic generations that have passed through the Sorbonne since Boutroux first became professor of philosophy in 1885, and to

the countless friends his lucid lectures and his charming personality won for him in England and America. To the students and professors of philosophy in France, to whom, from Bergson down, he has been *cher maître*, Boutroux seemed a fixed star, and a star of the first magnitude. His passing means the removal of a thinker and a man whose influence over the present generation of educated Frenchmen has been very great, not only through his original philosophic analysis of the basic conceptions of science, but even more through his gift of sympathetic interpretation of the great philosophers of the past.

It is perhaps as an illuminating teacher that Boutroux will be longest remembered. He possessed that ability that seems the gift of certain French minds, and that is the envy and the despair of foreign admirers, to transcend the *explication des textes* and to grasp the very soul of a man's thought. He aimed, in his own words, "to seek the truth together with a great philosopher, following him along the winding bypaths of meditation, sharing in his emotions, enjoying with him that harmony wherein his mind has found repose." Unfortunately, unlike Faguet, there did not flow from his pen an unending series of penetrating recreations of the thinkers of the past. We have a single volume of studies on Socrates, Aristotle, Kant; and we have his *Pascal*. But the memory of his lectures on the history of philosophy at the École Normale Supérieure and at the Sorbonne will not soon fade, nor will his art be forgotten.

In his original thinking Boutroux addressed himself to the problem around which has resolved so much of French philosophical investigation in the last generation, the problem of liberty. In a world of ordered uniformity and law, such as the scientific advance of the last century has demanded, where is there to be found room for that moral choice without which ethics, and indeed any human activity, even that of science itself, seems impossible? From 1874, when his doctor's thesis *De la contingence des lois de la nature* appeared, to *Science et Religion* in 1908, Boutroux undertook a criticism and an evaluation of the fundamental conceptions of mechanistic science in the interests of revealing the discontinuities and the contingencies that lie at its very heart. Probably his most important book is his *De l'idée de loi naturelle*, published in 1894, wherein his analysis is at its best. Here he tries to establish the difference between the various kinds of laws which the particular sciences have discovered, and especially between the static and mathematical laws of mechanics, physics, and chemistry, and the dynamic and qualitative laws of the biological and social sciences. The latter alone deal with concrete realities; the former are abstractions which represent but

one aspect of physical events, that susceptible of definite measurement. These mechanical and mathematical laws, it is true, are necessary, and set rigid limits to the events that are possible; but they leave undetermined the particular things to whose activity they set limits. Just what that activity will be depends on the laws of living, of dynamic, ever-changing things, which are too close to reality to be purely mechanical.

Boutroux insists strongly, following Comte, on the independence of each science, and on the irreducibility of its laws to those of any other science. The laws of the more concrete sciences, like psychology and biology, can not be deduced from those of the more abstract and mathematical sciences; each new realm is governed by new and special principles not contained in those of the previous realm. Nor is a complex whole no more than the sum of its parts; such a whole is genuinely creative, for with it new qualities come into existence. The free development of such new wholes Boutroux believes to be the truly active and contingent part of nature.

But the little that remains to us in written form of Boutroux is by no means the measure of his influence. It was the charm of his personality that carried his message so far. To know him was to love him. We need go no further than our own William James, who never mentions Boutroux in his letters save to call him "a regular angel" or "the gentlest and most lovable of characters." And it is surely as the teacher of the youth he so well loved that Boutroux would most wish to be remembered.

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THE JOURNAL OF PHILOSOPHY

AN ANALYSIS OF REFLECTIVE THOUGHT

IN replying to Mr. Buermeyer's criticism of my analysis of reflective thought¹ I suffer from somewhat the same embarrassment that affected him in writing it. He was handicapped by the fact that the analysis which he takes as the subject of his criticism was written for pedagogical purposes rather than for strictly logical ends. I am handicapped in replying by the fact that since Mr. Buermeyer states that he accepts the general instrumental position, and since he develops his own views incidentally in a criticism of portions of *How We Think*, I am not always quite sure of what his exact position would be were he writing to express his independent beliefs. In any case I shall ignore the statements of *How We Think*, and attempt to discuss the points made in Mr. Buermeyer's article on their own merits. It hardly seems to me that the original text naturally bears in all points the construction he puts upon it, but that is a minor matter, and if as acute a critic as Mr. Buermeyer misunderstood it, the text is hardly likely to have been unambiguous to others. So I am grateful to him for this opportunity.

The questions raised by Mr. Buermeyer concern the matter of steps or processes of thoughts. Starting from my analysis into (i) the occurrence of a problem, (ii) its specification, (iii) occurrence of a solving suggestion, or supposition, hypothesis, (iv) elaboration of suggestion, or reasoning, (v) experimental testing, he adduces reasons for holding that the reflective act can not be resolved into separate steps, and that, especially as thinking becomes more competent or scientific, the second, third and fourth "tend to fuse into one indissoluble act." Part of Mr. Buermeyer's contention I accept unreservedly, and am chagrined to find that I should have given any impression to the contrary. In speaking of "steps" it is perhaps natural to suppose that something chronological is intended, and from that it is presumably a natural conclusion that the steps are taken in a temporal sequence in the order taken

¹ This JOURNAL, Vol. XVII, pp. 673-681.

above. Nothing of this sort, however, is intended. The analysis is formal, and indicates the logical "movements" involved in an act of critical thought. It is a matter of indifference which comes first. Not even the occurrence of a problem need come absolutely first in time. For a scientific man may reason and experiment for the express purpose of discovering a problem upon which to exercise inquiry. Were I writing at the present time and writing a complete statement, I should certainly emphasize the point that the main distinction between uncritical and critical or scientific thinking is that the latter strives to combine as far as possible into one act the functions of inferring and testing. The attempt represents an ideal or limit which can not be attained except in mathematics. But so far as the endeavor is concerned, I accept not merely Mr. Buermeyer's criticism of temporal separation of steps, but his conclusion regarding the fusion into one process of induction, deduction and experimental testing.

Apparently this statement leaves no outstanding differences between Mr. Buermeyer and myself. However, the case is not so simple as this. Mr. Buermeyer says things which imply that in denying temporal separation he also denies any significant distinction of functions, while I still stand by the indispensable nature for logical analysis of these distinctions. Upon this point, however, the embarrassment to which I referred in the opening sentences comes into play. I am not sure just how far he means to go in the direction of logical as well as of psychological identification. In any case, he makes specific statements which point to obliteration of distinctions in logic between induction and deduction, and those statements will be used by me to clear up what seem to me significant logical distinctions. He refers indeed pretty continually to the functions of induction, deduction and experiment, in the course of showing their mutual involution. But whether this reference marks a recognition that induction, deduction and experiment are *logically* distinct from one another or whether it is a mere concession on Mr. Buermeyer's part to the exigencies of stating my own position for purposes of criticism, I am not sure.

This question is the important one, for it concerns the respective definitions of induction and deduction. My impression is that Mr. Buermeyer accepts the traditional statement of induction and deduction as logically movements respectively from the particular to the general and from the general to the particular. My chief concern is to modify this tradition. Induction I take to be a movement from facts to meaning; deduction a development of meanings, an exhibition of implications, while I hold that the *connection* between fact

and meaning is made only by an *act* in the ordinary physical sense of the word act, that is, by experiment involving movement of the body and change in surrounding conditions. These are the points to which I hold, surrendering to Mr. Buermeyer as unclear and inadequate those portions of *How We Think* calculated to leave any other impression. There are of course points of contact between the traditional statement and that which I have just made. Facts, data, are logically speaking particulars, while meaning functions as a universal. But the traditional discussion takes either particular or universal or both for granted as given, while I am trying to account for them, and to account for them in terms of the reflective transformation of an experienced situation from a confused and uncertain state to a clear and coherent condition. In this process, data with their particularistic function present themselves when the situation is subjected to analytic observation; they represent the attempt to specify the problem. Suggested meanings present themselves as the means of restoring unity, coherence and consistency to the particulars. As such they have the function of universality. Experiment is the indicated application of meanings to the particulars to see what happens—to see whether the suggested unification can be carried out and maintained. Experiment has a two-fold function. From the side of suggested meanings it is a *test*; from the side of the otherwise fragmentary data, it supplies organization, system. There are various things in Mr. Buermeyer's criticism which indicate that he accepts the traditional idea of ready-made or given particulars and universals, data and meanings. At this point, we part company.

The explicit discussion of induction and deduction may conveniently begin with a reference to the fact that the foregoing statements assume but three functions; while the one quoted earlier includes four—leaving out the problem in respect to which there is no difference between us. This seeming discrepancy is due to the fact that the text of *How We Think*, with its practical pedagogic aim, was especially concerned with enforcing the difference between uncritical and critical thinking.² Now one of the most marked differences between poor thinking and good thinking is the former's premature acceptance and assertion of suggested meanings. One of the marks of controlled thinking is postponement of such acceptance. Consequently I inserted between the problem and the presentation of a suggestion the requirement of analytic examination of the "facts

² The reader should not be misled by the fact that Mr. Buermeyer and I use the word "reasoning" differently. He uses it to express what I call critical or reflective thinking—thinking in its eulogistic sense. I prefer to confine it to "ratiocination" or rational discourse, the elaboration of implications.

of the case." This "step" is not however different in critical thinking from the step of a tentative or hypothetical adoption of a suggestion. It marks the endeavor to *control* the form which a hypothetical meaning takes. The point as regards my view of induction can be made clearer by distinguishing between the inductive movement and induction as a critically executed function. Both terminate logically in an hypothesis. But in ordinary thinking no pains are taken to control the formation of the hypothesis. In critical or scientific inquiry great pains are taken to secure an accurate specification and collection of observed data as the means of control. This "step" is in my opinion the characteristic trait of *scientific* induction. There is no implication that suggestions do not arise until this step is taken. On the contrary suggestions swarm and press for acceptance. That is the very danger against which systematically executed analytic observation protects us.

Mill set out to lay down rules for induction which shall be as stringent as syllogistic rules were for Aristotelian deduction. Now as against this point of view it seems to me essential to maintain that the occurrence to the mind of explanatory "causes" is not a matter which can ever be subjected to stringent rules. The elements of individual capacity and of accident can never be excluded in the inductive operation. Huxley remarks that after reading Darwin and Wallace their theory of the origin of species seemed so obvious that he could only wonder how he and others who had access to the same facts should not have thought of such an obvious explanation. Here is the factor which can not be reduced to rule as Mill set out to reduce it. But on the other hand, a certain degree of regulation of occurrence of hypotheses does obviously occur. How? The reply of *How We Think*, to which I still hold, is that the analytic examination (extensive and intensive) of observed events supplies such control as is available. This process can be reduced to a considerable extent to rules. Mill's "canons" are not what he took them to be, but they are, especially the method of Difference and the Joint Method, statements of the way to conduct observation in order to secure the data which are *most likely* to render the suggestion of meaning (hypothesis, theory, "cause") relevant and fruitful—"most likely," other things being equal. There is no guarantee like that of the Aristotelian syllogism such as Mill aspired to.

Instead of ruling out Mill's contribution to the theory of induction I tried to place it where it belongs. This consideration supplies my answer to Mr. Buermeier's remark that my account leaves me without the support of Mill's canons, and in general reduces induction to a mere matter of happy guessing. Just because the phase

of happy guessing *can not be eliminated*, specification of the nature of the problem or analytic observation is of transcendent importance in induction. The performance of analytic observation of course involves experiment; it does not precede it. And it is guided by some idea or suggestion in most cases. Nevertheless there is a *logical* difference between experiment as resulting in data which affect the *formation* of a hypothesis and as *affecting* its acceptance. This is true even when the *same* experiment has as matter of fact both effects. Hence I can not accept Mr. Buermeyer's emendation that instead of defining scientific induction as the sum of processes by which formation of explanatory conceptions is *facilitated* (and regulated) it should be defined as those by which their *acceptance* is determined. Logically, we must distinguish the two results, although practically (as has been said) the ideal or limit of scientific method is that the same concrete procedure should effect both of them.

This is not a matter of splitting hairs. Practically it is essential in order that the hypothetic character of an explanatory conception may be adequately apprehended; and that the one thinking may make certain that a proving or testing experiment brings to light *other* facts than those which have led to its formation and (tentative) adoption. One has only to read current literature on spiritualism and interpretation of dreams, proceeding from men who have established scientific reputations in other fields, to note the practical importance of this discrimination. The history of science is full of similar cases—such as the elaboration of Weissmannism.

The theoretical bearing of insistence upon induction as connected with hypothesizing may be seen by examining Mr. Buermeyer's contention that it is "at least equally deductive in character." I do not differ from Mr. Buermeyer in holding that it will be adequately performed in the degree in which it utilizes deduction. But this statement implies that they are *logically* distinct, while Mr. Buermeyer goes to the extent of holding that they are identical. Deduction involves as he points out "the application of knowledge, of ideas already in hand" (p. 675). Now this he claims shows that forming a hypothesis is deductive, since it rests upon prior knowledge. "Only if we already have some information about a problematic situation, some experience of analogous situations, are we able to form a conjecture not wholly random" (p. 675). And again he speaks of the competent thinker as the one who "focuses upon the case in question all the funded results of the agent's past experience, the occurrence of analogies at once subtle and to the point" (p. 675). Without this deductive quality he holds that hypothesizing would be wholly casual and one man's theory likely to be as good as another's.

The necessity of information about the problematic situation is not only admitted, but insisted upon. It expresses precisely the need of regulating the formation of conceptions by analytic observation which has just been dwelt upon. But it is denied unqualifiedly that this information operates logically after the manner of a premise of deductive reasoning. If it did, any two men with the same technical competency would collect the same data and give their elements the same weight. Suggestion, the occurrence of a hypothetical meaning, is in last analysis a brute fact, alogical. It happens or it doesn't; a certain "idea" presents itself or it doesn't; some other conception holds the mind. (That a similar inductive jump actually takes place in all significant deductions, I do not question. But this does not identify their functions, that is respective uses, values, characteristic results.)

In reference to the use of reasoning from information derived from other and analogous cases Mr. Buermyer seems to me guilty of a fallacy or confusion which I have elsewhere pointed out. (For example, *Democracy and Education*, p. 187.) There is a difference between saying that the suggestion of a hypothesis would not occur without prior experience and that it rests upon the use of prior experience. The former is a physical statement, the latter is a logical one. In fact men often have a suggestion occur to them without being aware of the prior experience which enabled the suggestion to spring up. Even in the cases when they are aware of an earlier experience which generated the suggestion they do not, if they are wise, place the suggesting experience and the suggested meaning in the relation of premise and conclusion, but only in that of suggester and suggested—"association of ideas" in common parlance. The logical question is whether the two situations are analogous. Knowledge exists and is used to suggest a hypothesis. But the question for present knowledge is whether the old case or rule is or is not applicable to the new one. Many of our common errors come from assuming that what is known in some cases is also knowledge for the case in hand. This kind of subsumption is the essence of all dogmatism. Deductive reliance upon old knowledge, that is putting the old case and the conception it suggests in the new case in the relation of logical premise and conclusion, is precisely the thing against which the inductive function has to safeguard us. That a trained man can rely upon old knowledge more confidently than an untrained one is a fact. But the logically trained man still makes a distinction between old knowledge as a source of suggestions and as a deductive premise for a conclusion. The analytic inspection upon which I have laid such emphasis as the crucial thing in induction has to ex-

tend not merely to the present problematic situation but to the prior situations from which a would-be rule or conclusion springs up. Only in this way, can we safeguard the acceptance of a suggestion by determining the degree of similiarity which exists between the two cases. Mr. Buermeyer refers to Newton's inference as to gravitation. Well, why not refer also to his inference as to light? It was the same man working with the same instrumentalities. In one case, the supposition of analogy with prior experiences has been confirmed. In the other case, it hasn't been. In short, the *hypothetical* character of inductive inference lies precisely in the supposition of analogy between the present problematic cases and other assured cases. This is the point at issue. There is no paradox in the fact that what is knowledge in one context is hypothesis or even error in another. But it is a fact which precludes that acceptance of prior knowledge as a deductive premise upon which Mr. Buermeyer's argument depends.

Upon the importance in induction of a plurality of competing hypotheses and of the importance of elimination, of exclusion, of all but one, I am glad to find myself wholly at one with Mr. Buermeyer, and also to accept the explanation which he gives (on p. 676). I should also agree with Mr. Moore that the assumption of a plurality of hypotheses as applicable (that is, as worth trying to apply) to the same set of facts is of the essence of skepticism. But I should add two qualifications. Such an assumption is itself involved in the hypotheses; or it is itself a hypothesis, namely, that each one of a number of hypotheses having *prima facie* claims is worth developing and examining. And I should add also that skepticism about the categorical value of an inductive inference is a prerequisite of good thinking. Part of the worth of competing hypotheses and of the method of successive elisions is that it fosters precisely his healthy skepticism.

But I can not see in acceptance of the importance of the method of elimination anything which militates against my analysis. I can see in it several things which seem to go against Mr. Buermeyer's. For example, since all competing hypotheses are equally suggested by the problematic situation in conjunction with prior analogous situations, they are *not* deductive conclusions from identical premises but are suggestions springing up from different sources. In the latter case each may need deductive amplification and be worth experimental testing. An assertion that incompatible hypotheses are deductively grounded in identical premises is, it seems to me, skepticism of the most nihilistic kind; it destroys the very possibility of any valid deduction. Mr. Moore's statement from this point of view is

quite moderate. But it implies no depreciation of plurality of hypotheses and a process of selection among them by a method of elimination. On the contrary. If one hypothesis is good because it starts one train of deductive implications and initiates one set of experiments, several are better because they extend the operation. In any complicated case, it would be practically impossible to arrive at a sound conclusion save as various deductive systems were compared and the results of different experiments used to check one another.

Mr. Buermeyer's criticism applies also to the treatment of deduction as the development of a suggested meaning through tracing its implications, that is, its logical connections with other meanings or conceptions. His discussion of this point is, however, comparatively brief, and mine must also be. He speaks of deduction in modern logic as "a general theory of types of order, or implication" (p. 676). I see nothing in this conception contrary to my point of view. Because ordinary reasoning constantly employs implicatory relationships in order to expand or elaborate a suggested meaning, there is every reason why an abstract theory of implicatory relationships should develop. Many of those who have engaged in the development of this logic would deny their ultimate instrumental or methodological character. But Mr. Buermeyer's general acceptance of the instrumental logic does not suggest any such disposition on his part. He says, however, that while the development of a content of a hypothesis uses these types of order, it can not be identified with them, since it is partial or selective. Precisely. Just as induction employs selected matter-of-fact information in forming a hypothesis, so deduction employs a system of previously formed conceptions or meanings or relations. It has to pick out and adapt for the purpose in hand, which is set by the problem. This selection is inductive because it involves forming an hypothesis regarding their value or applicability for the purpose in hand. Their established position within the general system of types of implication does not guarantee their appropriateness in the given context any more than the assured place of information in one context guarantees its use in a new problematic situation.

Up to this point I but repeat my agreement with Mr. Buermeyer so far as the use of induction in deduction is concerned. It would also be admitted or claimed that deduction occurs for the sake of experimental testing. More than this, there is constant testing *during* the deductive process; mentally conceptions are tried together to see how they fit for the purpose in hand. Otherwise, as Mr. Buermeyer acutely remarks, deduction would become like the calculations

of an adding machine (p. 680).³ But this dependence upon and use of induction does not, that I can see, affect the statement that the *function* of deduction, or deduction logically viewed, consists in elaboration of a meaning of which has first presented itself in a crude, undeveloped form, and which is accepted not finally but as worth being made the base of development.⁴ In fact, it is not easy to tell whether or not Mr. Buermeyer denies this point.

In conclusion, one ultimate point at issue may be said to turn upon the relation of act (or process) and function, or as Mr. Buermeyer points out the relation of the psychological and logical. I concede wholly to Mr. Buermeyer the contention that in the degree in which any job of thinking is well done, experimenting and deduction are *involved* in induction—and so on all the way around. But I deny that this factual involvement means logical identification. This denial seems to Mr. Buermeyer to imply going back upon that belief in the intimate relation of psychology and logic which is the essence of the pragmatic or instrumental logic. I do not think so. One might contend that a *science* of physiology depended upon ability to detect chemical *processes* and trace their workings with respect to all the functions of the organism. Would this cancel the distinction between breathing and circulation, even if it were shown that they not merely depend upon each other but that fundamentally similar chemical reactions were found in both? Function is not a separate process: to suppose that it is, seems to me the error of all abstractionism and absolutism. It is, however, a distinctive matter, for it concerns the results of processes. A man may go from New York to Chicago and from Chicago to New York upon the same tracks, in the same car and with the same engineer. But the purpose, the outcome is different. So is it with induction and deduction. The more we become aware of the identity of psychological process, the more the difference in function becomes significant. To ignore this distinctiveness of function because of the unity of act seems to me to deliver the cause of concrete, psychological thinking into the hands of the enemy—those who assert that all true reasoning is deductive

* I take it that Mr. Buermeyer would probably agree with me that the same thing holds of the general theory of types of order or implications which the new school substitutes for the old syllogism. As a matter of fact, they also involve induction.

⁴ If Mr. Buermeyer had carried his criticism to the point of stating that conclusions appear in every phase of reflective thinking I should also have agreed with him. It is far from being true (as a chronological interpretation of my analysis would infer) that conclusion is postponed till the problem is solved. We accept or adopt at every point. The difference is in the conditions and purpose of the acceptance, as is suggested above regarding acceptance of a hypothesis.

and that induction is a mere psychological preliminary, important only in the biography of the individual thinker. I wish that Mr. Buermeyer would turn his well-loaded guns upon that camp; and in conclusion I again thank him for the opportunity to make clearer points which in *How We Think* were doubtless left in regrettable obscurity.

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THE NERVOUS SYSTEM, PSYCHOLOGICAL FACT OR FICTION?

SO habituated have we become to the inferior position which psychology occupies among the sciences that we have become accustomed to excuse its deficiencies rather than to understand and correct them. Hence, the tradition continues that psychology deals with vague and futile materials, not natural facts which can be described and referred to valid laws. Indeed, it is only with extreme reserve that one grants psychology a place among the natural sciences at all. Of course it is the psychologist himself who is responsible for this situation for he is only very slowly prying loose the facts of his domain from the metaphysical incrustations in which the centuries have confined them.

The psychologist's handling of the nervous system is an excellent case in point. The nervous system, originally brought into psychology as a means of concretizing and interpreting the diaphanous and fleeting states of mind, has not yet been provided with its proper place as a component factor in a complex psychological act. Instead, it is mainly used as a scheme wherewith to handle the elusive knowings or awarenesses which are still all too prominent in psychological writings. Although the nervous system is made to do heavy duty in psychology, as is manifest from even the slightest examination of psychological literature, it is only in the case of reflexes and similar actions that it serves in any sense as a descriptive factor. In practically all other cases the nervous system is used in psychology merely as an explanatory agent. In the present paper an attempt is made to investigate the neural conceptions prevalent in psychology with the hope that we can thereby suggest what is factual and what fictitious in these conceptions.

Unfortunately, at present it happens to be true that in general, whether psychologists use the nervous system as a descriptive fact as in the study of reflex action, or as an explanatory instrument in other cases, the results so far as psychology is concerned are

equally detrimental. In general, we might say that two distinct and serious disadvantages are thereby sustained. Not only are the highly important nervous functions gravely misinterpreted, with the consequence that the whole psychological act is hopelessly misunderstood, but, what is probably worse, a barrier is immediately set up preventing future progress in our interpretation of psychological phenomena.

Briefly, let us examine each of the two uses of the nervous apparatus in psychology, and first the descriptive use of it. When we describe a reflex or any other act as a neural apparatus or as an effect of a neural operation we give only a partial description of the activity. Either we make the nervous apparatus the whole act to the exclusion of the muscular, glandular and other processes, as well as the stimulating circumstances, or else, when we include the muscular, glandular, and other response factors, we still exclude the stimulating conditions which are no less essential factors in the whole action. Need we say how inaccurate and useless is the description of an act when we omit from it any factor, whether it is muscular, glandular or discriminative? But we might suggest how seriously inadequate must be an account of a response act from which is omitted the specification of its differential character and specific sensitivity to a particular stimulating object and condition. To omit the recording of the stimulating conditions of reflex and other psychological reactions means to seek exclusively in the reaction phase of the behavior for the mechanism of the event, which in its essence is an interaction of a complete response with a specific stimulus.

That the nervous system should ever have been made into the exclusive materials of a psychological act may be explained by the great influence of histological and experimental findings upon the thinking of psychologists. Truly remarkable, of course, are the coördinating and integrating functions of the nervous apparatus even when considered as purely physiological (mechanical) functions, but just as certain is it that the narration of how allied and antagonistic reflexes operate as mere facts of synaptic coördination gives us a very slight notion of the exact place of the nervous apparatus in a psychological action. We meet here with a paradox, namely, that the over-emphasis of the neural apparatus in psychological descriptions, instead of adding anything to our understanding of the nervous system, rather deprives us of such an understanding, besides inducing us to place a very erroneous interpretation upon the total psychological act. No one can gainsay that experimental work on the nervous system is absolutely indispens-

able for an understanding of psychological reactions, especially of the simpler sort, but to overlook in such experimentation the pragmatic neglect of many other essential factors, means to misconstrue the facts studied. Let us also remember that in all experimental work the necessity to use simple actions in the laboratory procedure results in an emphasis on the neural¹ factors entirely out of proportion to their actual place in psychological behavior in general.

Turning now to the employment of the neural apparatus as an explanatory factor in psychological interpretations, we find that practically always it serves as a means of supporting a theory of behavior not actually derived from the observation of such behavior. In particular the neural mechanisms are used to uphold some sort of mentalism; that is to say, the neural apparatus is seized upon as an appropriate physical counterpart (either parallel, cause, or condition or result) of mental states. Among the conditions presumably explained by the neural apparatus is the manner in which the "psychic," whether conceived as stuff or process, can operate in a factual world. And so the nervous system is taken to be (1) the tangible counterpart of the intangible psychic; or (2) it serves merely to fill in the gaps (subconscious and association theories) between the functioning of mental (awareness) processes; (3) or further, it is made to operate as the complete substitution for consciousness in cases where no awareness is presumed to be present. We will not attempt to rehearse here all of the difficulties attendant upon the confusion of the nervous system with mind, which inevitably results from employing a neural explanation in psychology. Suffice it to say that it is our fundamental conviction that the necessity to look upon the nervous system as an explanatory principle for psychological processes is for the most part owing to a lack of appreciation of the essential fact of psychological phenomena, namely, the interaction of a complex organized specific response with a specific stimulus.

Many are the specific ways in which the nervous system is used in explaining so-called mental facts or awareness, and always, we submit, with hopelessly unsatisfactory results. We take pleasure in availing ourselves of Holt's excellent discussions² of the peculiar interpretations of the neural functions in mental activity. In speaking of the relation of automatic or habitual to so-called con-

¹ We doubt much whether an unbiased judgment would lay greater stress upon the neural factor than upon the glandular or muscular phases, although it seems clear that the interrelationship of response with stimulus would suffer in any such comparison.

² *The Concept of Consciousness*, 1914, Ch. 15. Also this JOURNAL, 1915, Vol. XII, pp. 365-372, 393-409.

scious activities he says, "One theory, for instance, has it that the cerebral cortex is the 'seat of consciousness,' while habituated unconscious acts are done by the cerebellum and cord. From which it follows that when a motion is first learned (for this appears to be always a conscious process) it is learned by the cerebrum, but thereafter it is performed by the cerebellum and cord (which never learned it). A most plausible conception! And thereafter, since it can be performed either consciously or unconsciously, a double set of nervous mechanisms is maintained in readiness. Or again, there is a view that 'consciousness' is comparable to resistance, or heat, developed at neural cell or synapse. Unconsciousness in a process is attained when the neural path is worn so 'smooth' that no appreciable heat is developed. When, then, an act has once become automatic it can not be performed consciously, unless the organism relearns it in a new set of nerves. This patently violates the facts."³ Also, Holt has shown⁴ in his analysis of the drainage theory of McDougall that sometimes the attempt to use the nervous system as an explanation of awareness results in the theory that when the nervous mechanism functions least, there is a maximum of consciousness.

Nor is the case any better with the action theory of Münsterberg which Holt himself espouses, for there has never been, nor can there ever be established any relationship between the nervous system and any kind of knowing. All such neural theories succeed only in throwing the nervous system out of its perspective in the total reaction. No less has this been the case when the nervous apparatus is considered the basis for the association of ideas, than when the neural mechanism is assumed to be a basis for consciousness in general. Indeed, in Holt's article from which we have quoted, we are inclined to believe the spirit of the discussion is opposed to the conception that a psychological act is primarily a neural act or that the activities involved in psychological action are due to and can be explained by the nervous apparatus involved. Holt's view when stripped of its traditional neural concretions is not far from our hypothesis that psychological behavior consists of the stimulating object or conditions on the one hand, and the action of the person on the other. Indeed, wherever Holt uses an illustration, his argument is definitely in accord with our own. We deem it most unfortunate that the neural tradition is so strong, since it induces such aberration in our vision of psychological facts as to prevent us from describing human behavior as it occurs and interpreting it in factual terms.

³ *The Freudian Wish*, 1915, p. 190.

⁴ *The Concept of Consciousness*, p. 334.

We would urge, therefore, that psychology should be emancipated from physiology, for it is only when psychological behavior is studied as it actually occurs that justice can be done to the nervous functions as well as to all the other factors in psychological phenomena. How troublesome the neuronie theory is may be judged from the fact that even when psychologists consider that they are studying responses to stimuli the neural prejudice influences them to consider all psychological behavior as merely the integration of reflexes. Two fundamental objections to this procedure may be offered. In the first place, reflex acts belong to the permanent behavior equipment of the individual and are not capable of integration;⁶ and secondly, to think of all of our behavior as reflexes or combinations of reflexes means to overlook the great variety and complexity of our actual behavior. Especially can such a conception not do justice in any sense to the complex social, esthetic, and moral adaptations to our human surroundings. We wonder if anyone ever seriously considered the nervous system as such to be of any service in distinguishing between two objects, to say nothing of a difference between the alternatives of a moral issue. But it is implied that in simpler cases the nervous system does perform such functions. Thus, the supporters of the neuronie theory necessarily overlook the presence in the behavior equipment of the person of other very important types of acts besides reflexes, as well as all the other specific facts of human adaptation other than neural action. To deny then, that all of our behavior is reflex in form does not mean in any sense to neglect or deny any quality or value of reflexes, but merely not to ascribe to them qualities they do not have, nor attribute to them vague and mystic properties of becoming something else by concretion and aggregation. For it is inevitable when we make reflexes the basis of every reaction that we introduce surreptitiously and *ad hoc* qualities and conditions which really are not there. An excellent example of this (because in this matter psychologists follow the physiologists) is the case of the physiologists who assume that upon the series of physiological facts which they study there is crudely superimposed another series which they call psychic.

The neuronie theory, we submit, stands in the way of psychologists who would develop a concrete science of actual human behavior, for such behavior, it need hardly be argued, is essentially such a complex adaptation to conditions that it is unthinkable that a neural theory could be an explanation of it. Moreover, to cling

⁶ In the psychological process of integration we assume that acts lose their identification in becoming parts of larger acts.

to such a theory means to make the reflex act the prototype of human action. And just here is where the extreme deficiency of the neural theory appears, for by retaining it as a general means of explanation we overlook its actual function and value as a component in all psychological phenomena.

If, while ourselves rejecting neural explanations of psychological action, we still seek a justification for the belief in such reputed explanations, we can find it in the overpowering impulse to make a rigid and fixed explanation of such utterly important and exceedingly difficult facts as psychological phenomena are. How vain is such a quest is clear from the fact that quite aside from its violation of scientific methodology (namely, to seek the cause of a phenomenon in a part of itself) we maintain, and with perfect safety we believe, that a genuinely critical search will reveal not a single valid principle of explanation which psychology has derived from physiology—although this does not deny, in any sense, that many valuable psychological principles were worked out by physiologists. In order not to be misunderstood at this point let us forthwith distinguish between the useful, nay, necessary employment of the neural factors as descriptive elements of actual reaction systems from the useless and pernicious employment of the neural apparatus as an explanatory process. We propose with all emphasis to distinguish between (1) the description of the exceedingly important part which the synaptic coördination processes as integrative functions play in every reaction system,⁶ and (2) the neural structures and functions which are implied to exist beside the psychological response and to explain it. In plainer words, let us distinguish between the facts which the neurologist and nerve physiologist have discovered and verified and the neural theories which the older psychologists have invented to materialize their psychism. Let it not be overlooked that we do not deny that in many cases the psychologists' imaginary neurology is based upon a germ of fact. A case in point is the elaboration of the neurological fact that the impulse meets with greater resistance at the synapse than in a nerve trunk, into the fiction that synaptic resistance is the cause or condition of such complex action as remembering or knowing. Such inventions consist primarily, of course, in the translation of associationistic mechanisms into neural terms.

It is all very well to desire fixed materials of references with which to secure complex phenomena, but as a matter of fact the nervous apparatus can not accomplish any such purpose, and pri-

⁶ Cf. our discussion of the reaction system in this JOURNAL, 1921, Vol. XVIII, p. 263.

marily, of course, because there does not exist any need to anchor down psychological facts when we consider such facts to be concrete responses to stimuli, as indeed they are. We cheerfully admit, as we have previously observed, that for extreme mentalists or spiritualists the neural mechanisms do serve as stable supports, but who, we might ask, would be willing to accept a type of psychology needing such support?

To test our proposition concerning the negative value of neural mechanisms in the interpretation of behavior we might consider the case of the child learning to keep his finger away from the burning candle. In particular, we might study Holt's neural interpretation, since this is one of the most recently formulated views based upon a mercilessly severe criticism of other neural explanations. After rejecting the Meynert scheme which James has made into a classic, Holt assumes that the child is endowed with two reflexes, one for extension and the other for retraction. Now the explanation consists in positing a greater "openness" and "wearing down" of the second or retractive path so that it will operate in preference to the first. But even if we agree to overlook entirely the absolutely hypothetical character of the "openness" and "wearing down" of paths, must we not assume, if the two reflexes are present, that both pathways are already open and worn down? Yet Holt finds it necessary to explain how the second or retraction path is opened and worn down relatively more. This explanation which he offers is twofold. In the first place, he asserts that the prolonged pain which the child suffers continues the retraction stimulus for a long period, thus causing the path to wear down. And in the second place, he suggests that just as the first five pedestrians across a snow-covered field do more than the next twenty-five toward making a path, so the passage of a first nervous impulse over a path of high resistance wears it down more than the same impulse would wear an already opened tract.⁷

As to the first point, what does Holt mean by pain? Not a mental something, let us hope. For if he does, he not only abjures the necessity for explaining anything, since by admitting mentalities he need merely associate with pain an "idea of retraction" as in the original Meynert scheme, but he also involves himself in the far worse situation that he can never demonstrate the connection between such a mental state and a nervous mechanism, to say nothing at all of how such a mental state can wear down a neural path. On the other hand, if he means a pain reaction, that is to say, a response in which the person discriminates pain, then the pain reaction clearly

⁷ *The Freudian Wish*, p. 69.

can be a stimulus to the child to learn to withdraw his hand from the candle flame. But in this case, of course, the learning consists of the acquisition of a complete reaction system and not the wearing down of a path in the nervous system.

And now let us examine the second part, namely, that the retraction path is worn down more because it is a new path. Here again it is difficult to see why the retraction path is new, since Holt assumes the two reflexes to be present. And as to establishing a balance between the two,⁸ in what sense is that learning to keep the finger out of the flame when in fact the balance means merely that both acts will be performed. That is to say, each time the child puts his finger into the flame he will also withdraw it. No, Holt must cleave to the notion of a greater openness of the second path, and not merely a balance between the two, but, even if we allow that the retraction path is new and that a new path is opened more at first, how is Holt's problem any nearer a solution? What more can happen with the retraction path than that it reaches the condition of the extension path when the latter first began to be used.

To us the entire explanation is exceedingly fantastic, and for the reason, we might suggest, that Holt is attempting to make the entire learning a neural affair,⁹ even to making the stimulating situation (the pain reaction) a factor in the neural process. Were it not for the faith in the neural theory as an explanatory mechanism it is doubtful whether both reactions would have been considered reflexes at all. Now if we are correct in assuming that Holt's handling of the neural theory is as effective as any, then we mean to suggest the possible incapacity of any of them to account for psychological facts.

Very differently is the learning explained on the organismic-response¹⁰ and stimulus basis. As a matter of fact, although it makes little difference for the explanation, we need not consider the first or extension act as a reflex. Be that as it may, we consider the act to be present and because the result is disastrous or unsatisfactory (painful) we observe a new act to be built up. We assume that the withdrawing action constitutes a new response built up for adaptation to the candle as a consequence of the previous reaction to that candle and in addition to the retraction reflex. In other words, there is a new behavior segment established in which the candle constitutes the stimulus. It is the acquisition of this reaction system which constitutes the learning.

⁸ *Ibid.*, p. 72.

⁹ At this point he is not living up to his promise in the criticism of neural theories.

¹⁰ The term organismic is used to point out the absolute inseparability of the stimulus and response factors in a psychological action.

We assume that in the second or new behavior segment, the child discriminates the stimulus differently or has developed a new meaning for the candle flame, a *new* meaning in the sense that a new differential response is called out by it. This is the essential fact in all perceptual activities. Instead of perceiving the object as something to touch, it is now something that hurts and must be (is) left alone. The essentially perceptual phase of the new behavior segment is a vestigial or incipient performance of the previous reaction, which precedes a final overt response—the withdrawal of the hand or some other mode of action. Especially must we guard here against any implication that the candle flame in the second behavior segment calls out an “idea” of the burn as in the Meynert-James scheme. No such factitious element is in any sense involved in our exposition. The strictly perceptual phase of the behavior segment is an act of the person in precisely the exact form as in the first instance. Moreover, the perceptual act is not in any sense merely a neural mechanism but a complete behavior, although it is true enough that it is not as open to the spectator’s observation as the first act. Also we must observe that in the candle-flame situation the perceptual act happens to be a visual response; that is to say, a reaction system in which the primary receptor is ocular, although the complete reaction system does involve in addition tactual factors. The new retraction act, then, is one in which the child’s contact with the candle is visual. In fact the importance of the new acquisition lies precisely in the avoidance of any actual touching of the object. But notice, however, that the learning may be just as effective if the new act involves auditory or olfactory perception. And finally, we must be very careful not to confuse the anticipatory perceptual reaction system with the final withdrawal or other response which follows closely upon the operation of the former.

The importance and value of our hypothesis as compared with any neural one, of which we take Holt’s to be an especially good example, is further indicated in the fact that it can accomplish two things which Holt admits his theory can not,¹¹ namely, (1) account for all kinds of learning and (2) explain the child’s concept of candle. As to the first, or the explanation of other kinds of learning, from our standpoint all learning, whether manual (handicraft), technical (skill, industrial or esthetic), or informational (book learning) consists of the organization of new behavior segments, that is, specific responses to specific stimulating objects or conditions. Each response constitutes the acquisition of a new specific adaptation to

¹¹ *The Freudian Wish*, p. 74.

particular surrounding objects. It is thus that capacities and information are acquired by the person.

Concepts, from our standpoint are completely implicit or vestigial responses to surrounding objects. In other words, they are the ordinary perceptual responses so abstracted from the original contact with things through the removal of the stimulating object, that they are aroused to action through a substitution stimulus.¹² Very simply explained, then, are the child's concepts of the candle; they are merely residual responses left over from the original contacts with the candle, and which can be translated into verbal terms. That concepts are derived from originally overt contacts with objects no one will deny, for it is a matter of course that the number and variety of our concepts depend upon our actual past experiences. Also, the degree of abstraction of our concepts depends upon whether our original contacts with the conceived objects were direct (actual) or indirect (imparted to us through speech or printed matter). Once more, unless concepts were implicit actions derived from our actual previous contacts with our stimulating objects, how could it ever be possible to react to these objects in their absence? To repeat, our concepts of objects are the reaction systems developed to those things, which can function relatively independently of them.¹³

Some there are who will still persist in the criticism that after all the organismic hypothesis affords us no intimation as to why reaction systems are built up as responses to stimulation objects. In considering this criticism two points must be carefully distinguished, one of which has no answer. If one means by this criticism that we have not specified why it is that any empirically specific response is developed to a particular stimulus, we might answer that in our argument we assumed that any given stimulating situation would necessarily call out an adaptive reaction correlated with that situation; since, further, we fundamentally assume that psychological reactions are phenomena of adaptation. But observe that the stimulating situations are not the exclusive conditions for the building up of particular reactions. Another very important set of conditions is found in the previous psychological development of the organism, and a by no means negligible circumstance is the biological organization of the individual. Nor do all of these in their aggregate exhaust the conditions for the acquisition of reaction systems; there are many others if only we devote ourselves to a study of psychological phenomena under the factual conditions of their development and occurrence. Most fortunate the day when

¹² Cf. Kantor, "An Objective Interpretation of Meanings," *Am. Jour. Psy.*, 1921, Vol. XXXII, pp. 231 sq.

¹³ Through substitution of stimuli, as we have said above.

psychologists will give up the ideas that psychological phenomena are simple or that they can be reduced to such partial explanatory terms as are involved in the nervous mechanism. Observe, however, that whatever explanation there be for the acquisition of our particular reactions, it can not exist otherwise than in the study of concrete behavior segments.

On the other hand, if one takes the import of the criticism we have mentioned to be that we do not know how reaction systems are built up at all, we can only question the legitimacy of the question. We take it that we are no more obliged to explain why psychological organisms have their specific properties (for we may assume the fact of building up reaction systems as a quality of the organism) than the physicist is required to explain why bodies fall. Not that we would restrict any speculation based upon fact and the criteria of logic, but we do insist that whatever we believe and assert concerning psychological phenomena must be in accord with observable fact and in harmony with the logic of science. In point of fact, is it not obvious that the criticism just discussed is urged entirely in the interest of a neural explanation, which we of course take to be something different from a psychological description?

Next to the misinterpretation of the entire reaction, by far the greatest damage sustained by psychology from the neuron theory is the retardation in the understanding of the actual function of the neural factors of reaction systems. If it is true, as we believe, that in much of current psychological work an erroneous use of the nervous apparatus is made, then it appears plausible that we are not acquiring all the information we should concerning the actual operation of that important component of all reactions. Surprisingly little is yet known of the exact workings of the neural mechanisms, and since numerous are the facts to be known it therefore behooves us to let no false hypothesis prevent us from investigating neural mechanisms as actual phases of behavior, that is to say as exceedingly complex coördinating systems, and not as causes of acts or counterparts of invented mentalities.

Not untrue is it to say, then, that the organismic hypothesis is presented in the interest of an emended conception of the relationship between psychology and biology. Instead of considering biological phenomena as merely explanatory schemes for psychology,¹⁴ we must study the physiological facts with which psychology is concerned as actual and essential components of a larger adaptation process, namely, the psychological response. No latitude is

¹⁴ The reader will recall that among the first achievements of "biological psychology" was the redefinition of "consciousness" as a thing or process developed to maintain the life of animals.

allowed us in this matter at all, and we dare not omit any physiological fact, because it is just a fact of nature that all psychological organisms are biological organisms also. This truth, of course, should offer no inducement to the psychologist to use physiological facts or fables to explain the phenomena of his scientific domain. Nor is this evil necessary in any sense when we study psychological responses as definite autonomous events existing in nature. Of course, if we consider the phenomena of psychology to be correlates or adjuncts of physiological facts we must frequently resort to the magical use of the nervous system. But regardless of how easily the words cortical and cerebral roll from the tongue of the psychologist when he wishes to explain some mentalistic fact,¹⁵ the neurologist still can not find in the cortex any of the magical conveniences which the psychologist requires.¹⁶ For example, there has never been any neural machinery discovered to account either for the existence or the association of mentalistic ideas.¹⁷

Finally, we must not be misled by the overlapping of some of the psychological data with biological facts into distorting such data by the indulgence in general physiological explanations; for in the first place, psychological phenomena are no more physiological than they are physical, and in the second place, the argument that psychology is based on physiology is no more valid than the argument that all sciences, because they are human phenomena, are based upon sociology. The only valid scientific procedure is to accord full recognition to any facts that we study without attempting violently to transform them into something else.

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BOOK REVIEWS

Christianisme et Neo-Platonisme dans la Formation de Saint Augustin. CHARLES BOYER. Paris: Gabriel Beauchesne. 1921.

L'Idée de Vérité dans la Philosophie de Saint Augustin. CHARLES BOYER. Paris: Gabriel Beauchesne. 1921. Pp. 233.

We have bracketed these two treatises, not merely because they

¹⁵ An explanation that frequently takes the form of thinking that specific brain cells are connected in some way with particular thoughts.

¹⁶ In similar fashion when the physiologist hits upon some fact which the mere study of neural mechanism does not and can not explain he utters the magic word "consciousness."

¹⁷ Cf. Herrick, *Introduction to Neurology*, 1920, Ch. 20. While we can not accept in the slightest Bergson's metaphysical substitution for the neuron theory (cf. *Matter and Memory*) we must nevertheless commend his excellent exposure of the defects of that theory.

are the work of the same author, but because they bear upon two distinct phases of a very large theme and serve admirably to deepen our appreciation of one of the most notable and dominating characters in the early development of western European thought. The modern world, or that portion of it, at least, which takes little immediate interest in the successive philosophic positions of Latin Christianity, has drifted a long way from St. Augustine and the speculations that made him so commanding a figure in the course of the centuries even among thinkers who have had no obvious concern with theology. Scholars like Picavet, or Harnack, or Loofs, may call attention to particular phases of his genius, and a group of students here and there may read and note, but, on the whole, interest in his writings has flagged, and he remains for the philosophic world at large, even in centers that are supposed to cultivate a tradition of familiarity with his views, one of that great brotherhood of authors who are more written about than read. Yet he is as actual and compelling in his wistful outlook on the mystery of things as Plato or Aristotle, and more modern, if less didactic, than Thomas of Aquin himself.

M. Boyer, one may be sure, is persuaded of all this; yet his first treatise, in spite of many an apparent statement to the contrary, limits the scope of his essays to two distinct points which he develops with a precision and an economy of argument that is as scientific as it is conciliating and restrained in tone from first to last. In the earlier volume he traces the story of the retreat at Cassisiacum, and maintains, against Boissier, Harnack and Loofs, and notably against Thimmes, to name only the more distinguished scholars with whom he takes issue on this point, that it was to Catholic Christianity, and not to Neo-Platonism, that the mind of Augustine yielded itself in the famous garden scene that took place at Milan in the month of September, 386. The succeeding nine years were years of development; but they were years of orientation, too; for they were the years of a neophyte who felt—perhaps too confidently—that he had discovered in the Neo-Platonic School a rational support for the change in his mental outlook that his “conversion” had inevitably forced upon him. The *Confessions* that all the world knows and the *Dialogues*, a purely philosophical work of absorbing interest and great beauty, in spite of the note of youth that pulses through it, furnish the ground of this contention. They simply will not bear the interpretation that the critics mentioned above have put upon them; and M. Boyer’s pages literally bristle with subsidiary fact and text in corroboration of this more reasonable conclusion.

In the subsequent work, *L’Idée de Vérité dans la Philosophie*

de Saint Augustin, published soon after *La Formation*, M. Boyer touches upon matter that is more actual to the present-day student of philosophy. Realist, Conceptualist, Pragmatist, Bergsonian, or Neo-Scholastic, each one of us has his metaphysic—some of us, perhaps, a *meta-metaphysic*—on the meaning of Truth; and not a little depends on the texture of mind with which he approaches the problem.

In the years before the War there was a good deal of discussion on the subject, hardly any of it thorough, or profound, unless we except Mr. H. H. Joachim's really able essay. If the general movement of ideas has since set in other directions, M. Boyer's study will not on that account suffer from a lack of timeliness; for there is something, not merely fundamental, but ineluctable and far-reaching, in the answers that one gives to these questions *in limine*. One's mental states, the quality of one's assents, one's ultimate inferences,—these things are involved in them from the start. All this was felt as acutely in St. Augustine's day as in our own. The prevailing skepticism borrowed a certain tone and *éclat* from the brilliant thinkers against whom the *contra Academicos libri tres* were directed from the villa at Cassisiacum. Truth, after all, was a discoverable thing; and the great neophyte was determined to bring that assurance home to the inquirers of his time. *Reducendi mihi videntur homines . . . in spem reperiendae veritatis*, he wrote in 386. It was an ambition in every way worthy of so tireless and high-souled a thinker.

M. Boyer sketches for us in lucid outline the general drift of the argument by which this life-purpose was carried out. He distinguishes four different senses in which the word *truth* is employed by Augustine throughout his writings. There is, first of all, the common, or *logical*, sense which pervades all the more recondite uses of the term, and which, in a sense, may be said to inspire them. It is the assertion or affirmation, of *that which is*, the identification, namely, of reality with whatever may be affirmed of it. From this logical sense of the term the transition to its more metaphysical suppositions may be inferred. There are three of these: (a) the *adequational* sense, as embodied in the relation between the thing and the idea; (β) the *Logos*, or filiative, sense, known only through the Christian revelation, in virtue of which the Son is the unique and perfect Expression of the Father; and (γ) finally, the *graduate* sense, which is to be found only in finite, or derived Reality, and which is rooted in the measure, or grade, of being that things have as imaging in their several likenesses, or adumbrations, the primary reality which gives them their measure of truth. It is in this sense

that the Scholastics, later on, maintain with Aquinas that *things are true in proportion to their being; maxime vera sunt maxime entia*. That St. Augustine in his various expositions of this aspect of the *truth of things* laid himself open to grave misapprehension in after times, many a chapter in the *Summa contra Gentiles*, to say nothing of the various Schools of Ontologism in the last century, abundantly proves. M. Boyer, though but a modest beginner, is to be congratulated on this really dignified and scholarly piece of work.

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Dieu—Son Existence et sa Nature. F. R. GARRIGOU-LAGRANGE, des Frères Prêcheurs. Paris: Gabriel Beauchesne. 1915. Pp. 770.¹

Let us say frankly at the outset that the delay in noticing this work of the distinguished Thomist and Professor at the *Angelical*, whose name is not as well known to American students of philosophy as it ought to be, is out of all proportion to its merits which are many and satisfying to a marked degree. The author describes his book, in a challenging sub-title, as a *Solution Thomiste des Antinomies Agnostiques*. Whether the class of students to whom we venture to recommend it for consultation, if not for exhaustive reading, will agree with this initial claim will depend, of course, on his previous equipment and his general attitude towards the more fundamental problems of epistemology. The work, in spite of its bulk, is professedly a text-book, with a text-book's inevitable limitations; but it will be found to be a very stimulating and wholesome contribution to many a more pretentious effort notwithstanding that fact. On not a few of the problems that the late Professor William James tried to illuminate in his own inimitable and engaging way, F. Garrigou-Lagrange speaks with compelling attention, and, be it added, with a courage as refreshing as that of the great Harvard teacher himself. As might be expected, the range of subjects touched upon in the course of the work is almost as extensive as the history of western thought itself; but the subjects themselves are pressing, actual and modern,—as the array of foot-notes and long citations, embodied candidly in the text, makes clear. Perhaps the chief merits of the book are its downright attitude towards those Kantian strictures on causality which so obsess the modern student of thought, and its obvious acquaintance with the philosophic literature of our time.

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¹ The book is now in its third edition.

Values, Immediate and Contributory. MAURICE PICARD. The New York University Press. 1920. Pp. vi + 197.

While primarily concerned with maintaining certain theses on specific and technical points of value theory, this little book has a much wider appeal. It is at once too limited in scope and technical in treatment to afford the general introduction the present state of the subject makes so desirable, but it formulates and discusses some of the chief problems which such a book must take into account. Part I. deals acutely and lucidly with questions of analysis, origin and interrelation of values. Part II., perhaps somewhat less successfully, with the normative aspects of the problem. Mr. Picard takes a definite standpoint. He describes himself as a Pragmatist with certain reservations. But this prevents him neither from taking seriously, nor from understanding—up to a point—the philosophy of absolute values which he is called upon to criticize.

Mr. Picard sets himself the task of settling a dispute which has long occupied students of value theory, namely the relation of intrinsic and instrumental, or of immediate and contributory values to each other. "My whole thesis," he says, "assumes that there are two classes and that they are of coördinate rank." Everything with which conscious activity comes into contact is valuable from both the contributory and immediate points of view. But it is only the contributory values that are objective. His position may be described as a polemic against the subordination of instrumental to intrinsic values, and against the supposed objectivity of intrinsic values. Starting with points that are matters of general agreement, namely that all contributory values are objective, some immediate values are subjective, his own conclusion is that all immediate values are subjective (p. 4).

It is with the second part of his polemic that the larger part of the book is concerned. The disproof of immediate objective values in the three spheres of morals, esthetics and logic is necessary, but it becomes of the first importance to disprove the theory that truth is an immediate value. For the general question Windelband's theory of norms is taken, for the more specific, Rickert's theory of truth. Mr. Picard has done a useful service in his conscientious critical study of these two value philosophies, a genuine understanding of which, especially of the latter, is signally lacking in American philosophy. There is nothing distinctively new in this criticism, and his apparent lack of acquaintance with the 1915 edition of Rickert's *Gegenstand der Erkenntnis* unfortunately vitiates much of his criticism so far as it applies to that writer. He charges both

philosophers with inconsistency and errors of method and in that charge he is undoubtedly to a degree justified. The element of *psychologismus* in both of them has been pointed out repeatedly. Rickert, he finds, adopts the position that truth and reality depend upon a transeendental *Sollen*, but he assumes the knowledge of certain facts, psychological, in order to prove this dependence. Windelband does the same thing. Yet to show internal inconsistency and error in method does not disprove the truth of the position, and it can not be said that Mr. Picard has disproved it. Indeed, in one place he says (p. 177), "our attack is not so much an attack on the theory that there are objective norms of thinking, feeling, willing, as an attack on the attempt to demonstrate the existence of such norms from psychological data." As to the charge of inconsistency and error of method, Rickert at least escapes it, in my opinion, in the more objective method of his later book. In any case this *psychologismus* is not inherent in the position, as I have elsewhere attempted to show.

On the other hand, Mr. Picard's positive contention that all objective values are contributory and do not depend upon immediate or intrinsic values for their objectivity, leads to some curious consequences. "Strange as it may seem," he writes, "the judgment that a vase is immediately beautiful will be found to be of contributory value" (p. 17). Apparent judgments of objective intrinsic value retain their objectivity by being forced, in pragmatic fashion, into the instrumental mold. This is possible, I think, only by a confusion, inherent in all pragmatic discussions of this question, of instrumental (in the sense of objective relation of means to ends) with contributory (in the sense of adding to the functioning of conscious activity). It is in this latter sense only that all *judgments* of value may be said to be contributory. This confusion of the judgment of value as contributory with the judgment of contributory value leads, of course, to the denial of judgments of immediate value. Mr. Picard thinks that such judgments are only apparent and due merely to the fact that "it is possible to use the cognitive function of conscious activity to express in thought and language facts of immediate value." The "value judgment" is a large question into which we can not go here. It must suffice to recall the main contention of the opponents of his view—namely, that value, as merely felt and not acknowledged in judgment, is not a value in any philosophical sense. It is merely a psychological fact, a part of existence.

In this concluding chapter Mr. Picard leaves the way open for a philosophy or metaphysics of value in a fashion which, while per-

haps not wholly consistent with his Pragmatism, is none the less admirable. In this connection it may perhaps be permitted to take note of the author's reference to the present writer in his preface. The "subjective point of departure," the "psychological position," ascribed to me applies only to an early work specifically designed to introduce the English-speaking public to that phase of value theory. That this scarcely represents my *present* position must be obvious to those who have followed the later developments in this field. Insistence upon my present "objective, non-psychological" point of view has value in this connection only because this development in the present writer's thought is typical of a fairly constant tendency in value theory as a whole.

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JOURNALS AND NEW BOOKS

SCIENTIA. October, 1921. *The Part played by different Countries in the Development of the Science of Radioactivity* (pp. 257-270): ROBERT W. LAWSON (Sheffield).—A history of radioactivity researches, with some closing remarks on the question of national contributions. The major contributions have been British, the most numerous German, then follow France, Austria, and America. *Le problème de la luminosité du ciel nocturne* (pp. 271-278): CHARLES FABRY (Paris).—A curiously interesting paper. A diffused light is responsible for the degree of illumination we find in the night sky. Though this light is only a five-hundred-millionth of the intensity of sunlight, yet were it not for this light, we should be able to perceive with the naked eye stars of the eighth magnitude, or ten times as many stars as we now perceive. The origin of this diffused light, whether from particles in nearby space, from faint auroras in our atmosphere, or from untold billions of individually invisible stars, is still a mystery. *L'association des idées dans les rêves* (pp. 279-296): ERNESTO LUGARO (Turin).—Dreams are neither mere associations of ideas following old channels nor the symbols for hidden desires. In dreams the emotions are stilled. The abundant originality which characterizes the sensory picture-show of the dream world has never been sufficiently emphasized. Though there is almost total incoherence to the succession in time, a dream taken at a given moment may present sensorially a wonderfully rich and coherent picture. *Buts et résultats coloniaux de la guerre mondiale. I. Les résultats politico-territoriaux* (pp. 279-308): GENNARO MONDAINI (Rome).—This first article is little more than a compendium of facts concerning the colonial growth of Eng-

land, France, and Japan due to the war. *Reviews of Scientific Books and Periodicals.*

Brandt, Lilian. *How Much Shall I Give?* New York: The Frontier Press. 1921. Pp. xi + 153.

Brunswig, Alfred. *Einführung in die Psychologie.* (Philosophische Reihe, herausgegeben von Dr. Alfred Werner, 34 band.) Munich: Rösl & Cie. 1921. Pp. 164. M. 15.

Bruhn, W. *Glauben und Wissen.* Leipzig and Berlin: B. G. Teubner. 1921. Pp. 108.

Eastman, Max. *The Sense of Humor.* New York: Charles Scribner's Sons. 1921. Pp. 257.

Harrison, Jane Ellen. *Epilegomena to the Study of Greek Religion.* Cambridge University Press. 1921. Pp. 40.

NOTES AND NEWS

PROFESSOR JAMES JOHNSTONE read a paper on "The Limitations of the Knowledge of Nature" at a recent meeting of the Aristotelian Society. He held that a candid and impartial survey of the speculative biology of the late nineteenth and twentieth centuries must force one to the recognition of a two-fold passage of nature. According to the fundamental concept of physical science, the second law of energetics, *viz.*, the augmentation of entropy, physical change tends continually to diminution. The universe, to use Bergson's term, is detending. To the biologist there is another aspect, for life is the incessant attempt of certain physico-chemical systems to resist the increase of entropy. The difficulty in accepting the main result of generalized relativity in biology is that for speculative physiology space-time can not be completely isotropic. More especially is this so if with Bergson we regard the quality of duration as the cumulative continuity of life. It is a passage as well as the persistence of that which has passed. The conclusion of the paper was that we must regard Newton's "ocean of truth" as amorphous in structure. The relations that are to be discovered in it are only in it in the sense that they come into existence with the thought that makes the relation.

Dr. H. H. Bawden, of San Ysidro, San Diego Co., California, informs us that he is disposing of his library, and will be glad to correspond with those who may be interested. Among his books he has an unbroken file of the JOURNAL OF PHILOSOPHY, which he values at \$90.

THE JOURNAL OF PHILOSOPHY

ON THE METHOD OF METAPHYSICS

EVERY metaphysical theory, whatever its type, gives primary importance to one pair of contrasted concepts. In fact we can define metaphysical thinking as that which follows the making of this distinction, and which attempts to make explicit the full meaning of these two concepts and their relation to each other. The discrimination is commonly expressed as that between the actual and the apparent, or between the existent and the seeming, or between the real and the phenomenal. We shall employ another term which has some important advantages, and shall express the distinction as between the real and the given. We wish to know the nature of the real; but we do not get that knowledge easily and directly: we must begin with something short of it, and must approach it through an earlier acquaintance with something which is original datum. If we hope to reach a general comprehension of reality we must found it upon the character of the given. Data of some kind are necessary material for any significant theory. We accept this as true in every science; and metaphysics is not exempt from the same condition. Indeed a recognition of this fact is of primary importance for an understanding of the method which should be followed.

From this underlying distinction it seems to follow quite clearly that any complete and acceptable doctrine should have two distinct parts, which we shall briefly characterize and then discuss more in detail.

First of all the theory must offer some account of the given simply as such. This part of a metaphysics would be entirely free, in an ideally successful case, from anything hypothetical. Certain data must be possessed, and must be granted as a foundation, if any ontological structure is to be raised at all. A statement of this original material ought to be possible without the admixture of any speculative and dubious factors. The natural scientists have accustomed us to a requirement of this kind. An impartial statement of any facts which are to be explained is a proper introduction to the statement of some theory which undertakes to make these facts more intelligible. In the problem of color-vision, for instance, there is a collection of phenomena which can be stated quite independently

of any theory which may be held concerning the retinal process. If the data were not formulated in the first place, without any speculative interpretation being allowed to slip into the account, the difficulty of finding an adequate theory would of course be immensely increased. This same ideal should hold in metaphysics. However difficult it may be in practice, the first aim should be a strictly non-hypothetical expression of the data from which the rest of the doctrine must be developed.

The second part of a valuable metaphysics must deal, on the contrary, chiefly with hypotheses. The datum is what it is, and we may suppose that its essential traits can be expressed. But our problem began by assuming it to be contrasted with something we name the real. A metaphysics could have no use for the conception of a reality which would not account at least for the main characteristics of the phenomenal fact; but various realities may be conceivable, each of which would be sufficient to account for these, and this range of possible alternatives must be examined. If some of the suppositions which we find ourselves inclined to make, or which have been urged in historical doctrines, are seriously self-contradictory, then of course that must be made plain: the incoherent must be simply excluded. If a theory, otherwise coherent, is incompatible with some part of the given, then that incompatibility must be observed and the theory must also be excluded. Should only one hypothesis as to the character of the real be able to survive these tests, then the demonstration of that fact would bring our ontology to a happy ending in a last chapter; and a last chapter would be a happy ending in itself. But if, as we shall consider probable, several diverse suppositions should remain tenable, then the most we can ask from a metaphysics is a clear statement of main alternative theories, and a recognition of any non-logical characteristics which may fairly make one theory preferable to another.

The data which should be formulated and described in the first part of an ideal theory are of course not to be identified merely with those experiences which especially arouse us to the problem of metaphysics. Striking experiences of change, deceived expectation, the disappearance of something from our world, the discovery of conflicting beliefs about the general character of the world, all these challenge us and make necessary the distinction between the apparent and the actual, the given and the real. In a sense one might say that these are the special data for the metaphysical theory to which they impel us. But its original material must include all that constitutes our experience. And this is not unavailable nor remote. There is no great difficulty in becoming aware of our datum, however difficult its adequate and pure description

may be. The simplest appreciation of it comes when one gives up all formulating of anything in words: a certain "this" remains, something which is at least concrete and multifarious. But of course our formulating is a fact too, as it occurs, and one which must have its own place in an account of the given. We must allow, or assert, that some actual interpreting of the data is itself a part of the data. But we can hardly deny that the possibility of reaching a metaphysical conclusion depends on our having something to interpret. Without a determinate material, which could be expressed as empirical fact, the terms phenomenal and real would be equally meaningless. And to say what this material is, without prejudice to any hypothesis of a more inclusive and trans-empirical reality, is the first problem of metaphysics.

If a description of the given is to be accomplished at all it must be obtained by some process of discrimination and analysis. Any account which purports to be descriptive of something concrete and individual presupposes that abstractions are made and a dissection performed. The possibility of this analysis, this discrimination of factors or traits, is difficult to deny in respect to anything which is in any way describable. Even a Bergsonian reality, which is asserted to be not portrayable as a complex, can still be significantly described by such various adjectives as continuous, active, tense, and so on. And other theories which undertake to deny that complexity can be accurately predicated of the real, allow nevertheless that the phenomenal world permits discrimination and has at least "main aspects" which accurate thinking must recognize.

Any understanding which proceeds by distinguishing and by abstracting must aim at some set of "primitive ideas" in which the analysis could terminate. If the analysis is expressed, some set of ultimate terms must be assumed, individually undefined but making others definable. So the most non-hypothetical account of the data of metaphysics must require some collection of concepts which are supposed simple, and which are obtained by a process of abstraction performed on the data themselves. We are inclined to believe that there must be some one particular analysis which is the single and only right means to an adequate comprehension of whatever is being analyzed. But there seems little to support this supposition. We ought not to take for granted, nor even to expect, that a metaphysics should contain only a single description of the given, and that it should be able to exclude every other description as faulty. A plurality of allowable descriptive formulations is the more reasonable expectation. That several analyses of a given material may be equally valid and practicable is strikingly illustrated in the field of symbolic logic. Alternative sets of primitive ideas may be em-

ployed with equal success, and an idea which is adopted as undefined and ultimate in one formulation may as properly be treated as complex and analyzable in another. The simplicity of a concept is not an intrinsic character which can be read by inspection, but it is something which the logician postulates after experiment with various tentative primitives. And in metaphysics we surely ought to take seriously the suggestion that the data which form our material may be analyzable with equal validity into more than one set of ultimate terms, and may be describable in more than one fashion with equal truth.

One expression of the given, one first broad formulation of it, would probably pass as acceptable to most common-sense people of our time. We think there is nothing hypothetical in saying at least that the given is an experienceable world of nature which includes our human society. But we must examine how much of this view can be retained in a statement which undertakes carefully to exclude all hypothesis; or rather, how far this must be re-phrased and translated, if its meaning is to be put into a strictly positivistic expression. Two types of answer may be mentioned, characteristic of divergent theories of psychology and appearing also in metaphysical doctrines which have contemporary interest.

The first answer would be: the given is experience, and experience is known without hypothesis or interpretation when it is analyzed into an order of simple qualities. All that common-sense finds as fact is held by this psychology to be accurately describable in this fashion, even of course one's own process of observing and analyzing. This kind of psychological analysis is evidently employed in Russell's theory of the physical world, with its doctrine of "particulars" and of the humorously named "official biographies." His elaborate hypothesis of perspectives and ordered classes of private spaces is thus actually based on it. But, once this qualitative analysis of experience has been admitted as valid of sense-perceptions, the other data, which he adopts in addition to the particulars, become also subject to the same possible treatment. The experience of being acquainted with a universal, for instance, is part of an actual biography too and is describable in the terms of this psychology.

The second type of answer is that which appears in the behaviorist psychology, rejecting the qualitative analysis of the given and making its own description in the terms of biological science. The philosophical theory represented by Dewey's *Reconstruction in Philosophy* stands on this ground also. In the reconstructed description of "experience," we are told, "the interaction of organism and environment . . . is the primary fact . . ." That the datum is of this biological sort is not merely one hypothesis among others,

nor a hypothesis adopted simply because it is verified in use. For the nature of verification itself is explained, in this philosophy, in terms of the adaptive responses of organisms. This biological formulation is not offered as a useful speculative interpretation of some data which could be properly described without recourse to any such speculation; it is presented as a merely descriptive expression of the data themselves.

If there is any force in the suggestion that several non-hypothetical accounts of the given may be possible, the disparate character of these two types of description should not be taken as proving that at least one of them is wrong. But some quite different set of primitive ideas may be more successful. An account of the given which would put the term self among the undefined ultimates is surely a competitor with the others. The whole problem is still open, and although uncertainty as to the allowable formulations of the data upon which a metaphysics must rest is undesirable enough, at any rate there is nothing to be gained at present by merely assuming that only one formulation is allowable.

We have been taking for granted that the given is something within which various abstractions can be made, and which permits of such analysis as this implies. Without this character the possibility of analytic comprehension and of description would of course be lacking. And when we ask that our metaphysics should contain a purely descriptive part, we make an *a priori* determination of the given to this extent.

But it is not subject to any such elaborate predetermination as is the phenomenal world in a Kantian theory. All Kant's argument proceeds as the analysis of a certain concept of experience; and this concept is simply postulated. If we postulate the occurrence of a certain type of knowing-of-objects, if we make this our fundamental fact and datum, or in other words if we assume that the datum is to be described as a knowing of a specified kind, then indeed we can obtain some *a priori* characteristics of objects knowable in this way. The summary description of the experience can be expanded into a series of analytic judgments which merely make explicit the peculiarities of this postulated knowing; and from these judgments we can deduce some of the characteristics which must be possessed by anything which can be known in this particular fashion. But such assertions as that all experienceable objects must be temporal and spatial, and must consist of something which endures through all change, are in this case merely drawn out of the postulated character of the process concerned, and are analytic judgments. There is no way whatever of compelling any one to agree that the given is actually an object-knowing of this specified type. One can express

what one finds the given to be, and if it is finally formulated as a something-known-in-a-specified-way, then the concept of this type of experience can be analytically expressed. But the occurrence of this particular kind of experience is entirely a question of fact.

If we assume that a purely descriptive account of the given is possible, we still have to consider how wide a range of significance could be claimed for the primitive ideas required in it. They would have one meaning as abstractions from the given fact itself. Is it possible that they would have also a much larger application? Could they be used to give us some knowledge of a trans-empirical reality, perhaps of one from which the given would be logically derivable?

It is fairly clear that we could not attribute any such importance to these ideas. Suppose that an analysis of the merely given had been completed, and that a collection of terms had been reached which were adopted for that description as undefined and simple. In some other description they might conceivably be considered as complex and analyzable; but so long as we stick to any single description we could not treat any one of them as a possible source of others. It is not possible that any final term in a systematic formulation of the given could be taken as the concept of a meta-physical entity from which the concrete given would follow as a logical implication. The complex concept of the phenomenal fact can not be deduced from any item which a purely descriptive expression of the phenomenal may require: the analysis of the given can not disclose any logical source of it. Within experience we can not find any origin of experience. No concept obtained in the abstraction-process could be known to have any applicability except within the given itself. And, if our metaphysics is to contain anything more than a purely descriptive expression of the phenomenal, that additional content must be essentially hypothetical and speculative.

There is no obligation which would compel a person to carry his theory of the given beyond a simply positivistic description such as we have been supposing. And there is no obligation to attempt even a description. Abstractions are required by any one who wishes to know abstractly; but without that purpose they are not required at all. It might be objected, in behaviorist terms, that abstractions are required constantly by any organism which is to survive, since selective responses are a condition of its keeping alive. But we need not commit ourselves to this biological description. And we may be sure that the non-occurrence of a conceptual understanding would not annihilate the given. The mystics have a right to imagine this absence of abstract comprehension, and to produce it so far as they can. If the resulting experience is enlightening, however, the en-

lightenment must apparently remain incommunicable: what can not be conceived can hardly be described.

But the mystic state may be assumed a very rare accomplishment; actually we do dissect our world, and do use abstractions in comprehending it. Actually, also, we would not be satisfied with a philosophy which consisted in a mere description of phenomena. As metaphysics begins in the conviction that the given is to be distinguished from the (real), so we are led to make a hypothetical extension of the given, and to suppose a more inclusive fact. All metaphysical thinking postulates this; and even the positivists and empiricists have in fact allowed their accounts of the world to contain a very considerable hypothetical element.

A metaphysical theory, then, ought to have a second part which is frankly and explicitly speculative in character. We can conceive of various trans-empirical reals; and we can see that there are degrees of compatibility between these several suppositions and the phenomena from which we must start. The problem is to determine, so far as we can, what types of reality would be consistent with the given as we find it to be, what various kinds of being might have this actual seeming. So long as we avoid self-contradiction in our assumptions we may surely use the greatest freedom in tentative and experimental suppositions, and may assume a reality of any imaginable extent or variety. There would be more fault in restricting hypotheses to traditional forms than in encouraging the most unchecked speculation. Men have probably suffered more from too limited a conception of possibilities than from too credulous an acceptance of mere speculations.

In the problem of a pure description we were led to suppose that more than one may be practicable; and in the problem of the hypothetical interpretation we find a somewhat similar situation. We take for granted that there is some unique and all-inclusive reality; but we should be slow to assume that the given is sufficient to carry us very far in determining its character. Certainly for the present, and while a satisfactory statement of the data is still in question, we are very far from any narrowly specified concept of a reality which alone is compatible with them.

There are, broadly, two main divergent developments which a speculative metaphysical theory may take. In a theory of one type, of which James's radical empiricism may serve as an instance, the real is supposed to be immensely more inclusive than the given, yet is supposed to be simply more of the same sort. The distinction is between a part and the whole, rather than between one kind of being and an essentially different kind. The other type of theory may be illustrated by Berkeley's doctrine of ideas and spirits:

there is supposed to be a reality which exceeds the given, not merely by including more of the same variety, but also and especially by including entities of a radically different kind. A theory of this second type is under obvious difficulties in drawing up a description of the real or reals which it assumes. The only significant terms at its disposal are those which are abstractions from the given; for the only source of the meaning of our words is in our concrete experience, and their only assured applicability is to it. But concepts can be constructed which are not descriptive of anything given, and they can be supposed to have some kind of trans-empirical significance.

If this is indeed the situation in metaphysical theory, the presumption would apparently be that some very different hypotheses are equally in agreement with all the facts we have. The business of our theory is probably to discover the allowable range of suppositions rather than to prove a certain one finally true. In each of the sciences we have found that in general the known facts in some problem limit the number of possible explanations, but do not establish any single one. There is no evident reason which would lead us to suppose that metaphysics is in a different case. The best obtainable result may be a set of mutually exclusive but equally tenable theories. Take the hypothesis, for instance, that every event is a required part in the fulfillment of some all-inclusive design. No actual occurrences can refute this, for any collection of events is conformable to some purpose or other: a teleological interpretation is always possible for anything that happens. But we find also that the contrary hypothesis is at least as tenable, and that many events may be supposed to have no purposive character.

The history of philosophy consists partly in a series of demonstrations that earlier supposed demonstrations were inconclusive. But a doctrine which fails to be established may retain some value as a speculative possibility. We hope, of course, that our data will lead us to a fairly specific knowledge of the nature of reality: but we may admit that a group of very diverse hypotheses about it is more probably accomplishable. One may recall the answer which Berkeley received to his appeals for the payment of Parliament's subsidy for his colony. Walpole replied that, speaking as minister, he could assure him the grant would be paid in due time; but speaking as a friend he advised him not to count on it.

The material which we try to understand has its own definite character, and any ontological suppositions must be adapted "to save the appearances." The phenomena are the first essential determi-

nant of any hypothesis about the real. But it may be useful to notice more carefully the relation which exists between the two.

The ideal of any doctrine about reality would be a deductive system, from which verifiable conclusions could be drawn concerning phenomena. Verification is not wholly an affair of the future. Present phenomena are a present criterion. If we can say what is given we can also prescribe some of the deductions which a satisfactory system must allow. These inferences are in fact simply begged and postulated, in advance of any knowledge as to how we may be able to obtain them. We must assume some real which can account for the occurrence of exactly this given. We try to find some way of deriving what we already accept as fact.

This method of reaching a set of principles is commonly discredited. When we discover that a person with whom we are arguing has already settled on his conclusion, and is merely making a determined hunt for premises which will justify him in holding it, we are inclined to be scornful of his procedure. We do not easily admit that we ourselves are given to rationalizing our convictions in this way; and we condemn the process even when we believe, in some particular case, that a man practically could not avoid the prejudice which he displays. We are apt to think that our metaphysics ought to be free from any trace of such rationalizing. But, in a very genuine sense, no theory of reality can be free from it. The essential undertaking is to discover principles from which would follow facts of the type we find. To understand the world *more geometrico* must still be the ideal of philosophy. But the modern theory of mathematics has shown more clearly what a geometry is; and another suggestion for metaphysics may be derived from this work.

Not until recent years has there been an adequate formulation of the primitive ideas and the postulates which underlie the old Euclidean geometry. We know now that the postulates of this geometry are not accepted because they are certain in themselves. If they are considered to have a superiority over certain other alternatives it lies in this, that they permit the deduction of some theorems which are believed to be more useful than those which would follow from the other postulates. The theory of relativity, however, now seems to have shown that the Euclidean theorems are inapplicable to some physical measurements, and that one of the non-Euclidean geometries is always applicable. If so, the postulates which go with this non-Euclidean geometry will be adopted without dispute, or at least without successful objection. In themselves Riemann's postulates are not more true nor less true than Euclid's; the truth value we attach to them is dependent on the practical acceptability of the theorems they generate.

A similar situation exists in metaphysics. If we could get a completed doctrine into systematic form we would place as the postulates of the system a set of propositions which had been reached by a process of experimentation and selection. They would not be given their place in the system because they were intrinsically true and obviously certain, but simply because they would furnish an adequate basis for the inference of some propositions which are simply taken for granted when the theory-making begins. We can not hope to find any ontological principles which are absolutely self-evident, which can be recognized at sight, and whose inherent certainty would guarantee the certainty of their implications. Any set of assertions about reality would be sufficiently and wholly justified if they permitted the inference of empirical facts which we already hold, and led to no inferences which are contrary to such facts. An illustration may be drawn even from Bergson's theory. Suppose we could properly assume that a simple description of the data already includes these facts: that instinct and intelligence are two different forms of knowing; that they have reached their highest development in insects and in men, respectively; that there is a constant origination of new forms of life; and that this spatial world is predominantly but not wholly mechanical. Then the assumption of a vital force such as Bergson describes (of the order of consciousness, active, tense, able to relax its tension, *etc.*) would be plausible just in proportion as it could be seen to involve the occurrence of this kind of a world. One may object that those alleged facts are not merely descriptive of the given, and that they already contain a hypothetical interpretation of the actual data. But in Bergson's argument, one may fairly say, they have the rôle of data; and the only question with which we are here concerned is the kind of justification which a proposed account of reality could have. If the data can be accurately formulated then that formulation will evidently be the touchstone of any ontological doctrine which may be proposed.

It would be logically possible, as we said, to give up the metaphysical problem altogether, and not to contrast the given with anything. But if the distinction between it and a reality is maintained, then the only account which we can produce of that reality must be hypothetical. A positive description of the given can not lead us to anything except abstractions made upon it. Analysis can not discover any factor in it which somehow again contains the original, and from which it might then be logically deduced. Any theory, also, of the type which holds that the phenomenal world has its source in a mind of a certain sort and is constituted by forms employed by various faculties of this mind, is evidently hypo-

thetical. Like any other hypothesis it must first be tested for internal coherence: if we deny temporality and causality to this mind we must consider whether it can be supposed to operate in any way; and if we assert that no other objects except sensible objects can be either given or validly conceived, we must consider whether we can know anything at all about a non-sensible mind. But supposing that no incoherence has been found in this hypothesis, it must seek its confirmation like any other candidate, by allowing deductions which we already accept and which are part of a description of the given.

The situation which we thus find in metaphysical theory is similar to that which has recently been developed in logic. The validity of the classical fundamental certainties, *i.e.*, those propositions whose denial implies their affirmation, is actually undisputed; but logically it is conditional and requires the assumption of a particular set of postulates for our logic. Other postulates could be adopted which would not require the truth-value to be assigned to such propositions; and these other postulates could be used without violation of consistency as they would define it. The postulates of our actual logic are accepted because they validate inferences which we consider good, and not because they themselves are separately and individually indubitable. We have to work backward to discover the principles which we are actually implying. And the formulation of an adequate set of primitive ideas and postulates for our logic, although now it has probably been accomplished, is not even yet a matter of agreement among the symbolic logicians.

In our metaphysics, then, if we can obtain a description of our data it will serve to limit the number of hypotheses which can be held concerning the nature of reality; and the deducibility of the chief characteristics of such data must be the main test by which any proposed ontological doctrine should be judged. If, as we have supposed, it should prove possible to make more than one valid description of the given, we may believe the number of tenable hypotheses would be thereby still further reduced; but until we are more certain about our descriptions we can hardly take for granted that the specification of reality can be carried very far even in this fashion. We are not sure how to express the given; and we are quite sure, when we stop to consider, that our understanding of the world is partly an interpretation and a supposition. We realize occasionally that our active beliefs are held in the face of other possible assumptions which have quite as good a logical standing. It would be proper, then, for a systematic metaphysics to give some recognition to the non-logical features by which some hypotheses acquire a weighted value for us. Two of these may be mentioned. Some

speculations we discard as wild and extravagant, though we can by no means show that they are inherently impossible. We take Occam's razor as our best implement: not to destroy all hypotheses, but to insure a comely simplicity among the survivors. At bottom the motive for this is esthetic. Whatever alternative theories may be allowed as logically tenable, we admit a differential value of this kind among them. Furthermore, of two suppositions which are, so far as we see, in equal agreement with the data, one may be actually dispiriting and the other may be effectively stimulating. Hypotheses have what may be called a moral aspect as well as an esthetic. Great individual differences must be recognized in the valuations which men make on this score: the whole topic leads off into psychological problems. But one is justified in holding that a metaphysical theory may properly take notice of all the main features which make one ontological hypothesis more acceptable than another.

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CRITICAL REALISM

WHEN *The New Realism* was published, nine years ago, some observers professed much surprise at the spectacle of philosophers laboring side by side in a common cause, without any discernible tendency on the part of any one of them to turn upon and rend his neighbor. Since then, however, the achievement has been duplicated in the volume entitled *Creative Intelligence*; so that the philosophical public is in process of becoming habituated to the phenomenon. Whether these joint undertakings are evidence, as some seem to suppose, that philosophy is at last to enter upon an era of truly objective and rigidly impersonal inquiry, after the manner of the sciences, or merely that philosophers possess a hitherto unsuspected capacity for coöperation, is still a question upon which it is useless to look for agreement. The latest volume of this kind is the recent *Essays In Critical Realism*,¹ the purpose of which is to expound and defend the realistic faith which the contributors to the volume hold as a common possession.

As compared with the earlier books, this work offers a comparatively simple programme or plan of campaign, in that it is centered almost exclusively upon the nature of knowing. Five of the seven essays are devoted to this topic. As is stated in the preface, the authors have "found it entirely possible to isolate the problem of

¹ *Essays in Critical Realism: A Coöperative Study of the Problem of Knowledge*. DURANT DRAKE, ARTHUR O. LOVEJOY, JAMES BISSETT PRATT, ARTHUR K. ROGERS, GEORGE SANTAYANA, ROY WOOD SELLARS, C. A. STRONG. Macmillan & Co. 1920.

knowledge," so that it is with reference to this problem, as contrasted with ontological problems, that the collaborators find themselves in essential agreement. In the two remaining essays the emphasis falls on the side of criticism rather than construction. The essay by Lovejoy is, in the main, a criticism of Dewey's pragmatism; and the essay by Rogers is a critical review of various theories regarding the nature of truth and error. While these essays contain much that is of interest and importance, they will be omitted from present consideration, since it is my purpose to discuss more specifically the doctrine to which the authors have applied the name of Critical Realism.

As was to be expected, the authors are at considerable pains to differentiate their position from other forms of realism. This is done by emphasizing the distinguishing feature of their doctrine of knowledge. Naïve realism, so it is pointed out, made the mistake of supposing that physical objects could be intuited directly, and so found itself unable to deal with certain difficulties, particularly those arising from the relativity of sense-perception. Copyism escapes from this difficulty, to be sure, but it is obliged to get over to outer existence by a process of inference, which can be done only by a *tour de force*. Neo-realism is an attempt to rehabilitate the faith of naïve realism in the identity of experience and object, but it is obliged to construct its world out of conceptual entities or essences, which gives rise to various difficulties, especially with reference to the problem of truth and error. Each of these standpoints contains something of value, which it is possible to conserve through a reinterpretation of knowledge along the lines laid down by Critical Realism. Naïve realism and neo-realism are correct in insisting that physical objects are known directly and not through a process of inference. Copyism is correct in holding that experience and object are numerically distinct and not identical. The reconciliation and justification of these claims are the fruits of the new conception of knowledge which constitutes the distinctive trait of Critical Realism.

Stated briefly, the doctrine advanced by Critical Realism is about as follows: Knowledge takes places by means of a datum or "given." This datum, which is denoted variously as "quality-complex," "character-complex," and "essence," is not an existence, but something more in the nature of a meaning or what Bradley calls a "floating adjective." "By the essence of a percept I mean its *what* divorced from its *that*—its entire concrete nature, including its sensible characters, but not its existence" (p. 223). This doctrine of "essences" is the central feature of Critical Realism. It is by means of this doctrine that the position undertakes

to avoid the errors of its predecessors. Since the essence is not an existence, it can not be identified with outer reality, after the manner of neo-realism, though it can be *affirmed* of outer reality. Moreover, this affirmation is direct, which means that the reality of which the essence is affirmed becomes the object of knowledge, as against the assertion of copyism that the immediate object of knowledge is a mental state. To put it differently the essence is a *means* but not an *object* of knowledge (cf. pp. 97, 189, 226). It makes natural and easy the transition to an outer reality, which is so difficult for copyism; and it maintains the distinction between content and object of knowledge which is denied by naïve realism and neo-realism.

If I interpret the doctrine correctly, this is the solution proposed by Critical Realism. It is a solution accepted by all the members of the group, but is elaborated particularly by Strong, who comments feelingly on the great significance of essences: "As I have elsewhere explained, I owe this precious conception to Mr. Santayana. I had long been convinced that cognition requires *three* categories for its adequate interpretation; the intermediate one—between subject and objects—corresponding to the Kantian 'phenomenon' or 'appearance.' At one time I used to designate this category as content, since it agrees with the current conception of a content of consciousness; but in my efforts to conceive it clearly, I was continually falling off either into the category of object or into that of 'psychic state.' What was my relief when at last I heard Mr. Santayana explain his conception of 'essence,' and it dawned upon me that here was the absolutely correct description of the looked-for category" (p. 224, note).

At first sight the theory presents an appearance of engaging simplicity. It starts with the tri-partite division of mental existences, external existences and essences; and asserts that the essences are the meanings or contents through which the external existences become known. As long as we are careful to insist upon the status of the essences as floating or wandering adjectives, they are incapable of usurping the place of existences and offering themselves as the objects of thought. These floating adjectives seek an anchorage, which is provided by the act of *affirming* the external existences to which they pertain or the nature of which they reveal. This act of affirmation is much more fundamental and direct than any process of inference. "The sense of the outer existence of these essences is indistinguishably fused with their appearance" (p. 20). "We do not *infer* a realm of existence co-real with ourselves but, instead, *affirm* it through the very pressure and suggestion of our experience" (p. 195). That is, essences lead on "irre-

sistibly" and "instinctively," to the world of existents; and so we escape both the Scylla of copyism and the Charybdis of hypostatized meanings.

It soon appears, however, that this doctrine of essences needs to be handled with care. On this point, it is intimated, there is, unfortunately, no complete agreement among the Critical Realists themselves. This issue is indeed "the one question in our inquiry upon which we have not been able fully to agree." The statement of the disagreement is relegated to a pair of footnotes (pp. 4 and 20), apparently with the commendable purpose of keeping family squabbles as much as possible out of the public eye. The disagreement, it seems, turns on the question of what constitutes a datum or essence. Three of the seven hold that the datum or essence is in every case the character of the mental existent; while the remaining four take the position that the essence may be, so to speak, composite in nature. According to the latter view, the essence may result in part from the nature of the mental state and in part from the function of the mental state or the use to which it is put. The statement of the difference is brief to the point of obscurity; but as I interpret it, the point is something like this: If I see a cushion as blue, the blue is an essence or datum. The mental state of the moment may include the quality 'blue,' which is referred to the physical object. The dissenting three hold that it must be so included, since this is the only way in which essences can be obtained. But in the opinion of the second group, the datum, while it may be, need not be, a character of the mental state. The latter need not include the quality blue at all, "as, *e.g.*, if I see the cushion in a faint light, when it is nearly black, or through tinted glasses, and yet perceive it as a blue cushion. So it is clear that the characters that make up the datum depend more upon the associations than upon the actual characters of the mental state" (p. 30). The actual datum may be constituted in part by the function performed by the mental state. On page 29, at the end of an illustration intended to show that the characters of the mental state may be very different from the datum or essence, it is said that "when a complex mental state of the sort just indicated exists, together with the readiness of the organism to act in a certain way, then we say, and feel, that a certain datum has been 'given' or has 'appeared.' This is all there is to 'givenness'."

Perhaps we can rest content with the earnest assurance that the disagreement is not a serious matter. But, even so, a consideration of the disagreement furnishes an opportunity to gain a further insight into the meaning of Critical Realism. If we take the view

that the essence expresses the character of the mental existent, we come somewhat closer to the position of copyism. If my mental state must "consist" in part of the quality "blue" (whatever that may mean), it follows that sensible qualities are "subjective substitutes for the corresponding parts of the physical world" (p. 191), and that "the content in terms of which we think the object must have the property of *reproducing* the character of the object in some measure" (p. 198, italics mine). This is certainly the *language* of copyism. On the other hand, if we take cases in which, according to the second view, the essence is the joint product of mental states and their function, there is no justification for such language at all. The essence is not a subjective substitute and there is no process of reproduction. In appearance at least we are now much closer to the standpoint of common sense. Since in such cases "the datum as a whole (the total character given) is not the character of any existent" (p. 21, note), attention is naturally directed away from the conventional notion of reproduction and towards a consideration of function.

Whether the disagreement just mentioned has any serious consequences for their position is a question which we can afford to let the Critical Realists settle among themselves. My purpose is simply to point out the shift of emphasis towards function which the disagreement brings to light; a shift that a pragmatically minded reader is not likely to overlook. He will not fail to notice that if "the datum as a whole is not the character of any existent," but is determined, in some measure, by the behavior of the organism, the import of this doctrine can easily be translated into his own familiar language of stimulus and response. The "datum as a whole," he finds, varies with the response; and there is little occasion to bother with the metaphysical "external object" of Critical Realism at all. "Data are directly dependent on the individual organism, not on the external object, varying in their character with the constitution of the sense organs and the way in which these are affected, and only secondarily and indirectly with the external thing" (p. 225). Moreover, these data are symbols or signs which make it possible to "rehearse and anticipate the movement of things" (cf. pp. 170-173). In other words, the data of Critical Realism can easily be induced to take the place accorded to objects in pragmatic philosophy. Datum and body vary concomitantly, and the process of experience becomes a process in which we "adjust our bodies and our beliefs" to our environment (p. 30), which seems to mean that experience is a constant quest for a more adequate stimulus. We test the adequacy of our data by observing how they *work*. If they stand up under the

test, they become symbols of other experiences, which is to say that they are not the objects but the means of knowing. It is all a question of further experiences. If a sense-observation requires confirmation, we appeal to the other senses, or to the observations of other persons, or to the congruity of the given observation with the whole body of our past experiences (*cf.* p. 106). To the adherent of pragmatic doctrine such extensive agreement is naturally a source of considerable gratification.

To the Critical Realist, however, this agreement is of minor significance, since his chief concern is for the "external object." To him the datum is not merely a symbol of other experiences, but is a warrant for the belief in an outer existence. Just how the datum functions in this connection is not altogether clear. It is stated that we pass to outer existence, as it were, "instinctively," since "the sense of the outer existence of these essences is indistinguishably fused with their appearance." "Thinghood and perception go together" (p. 197). Passages like these suggest that the reference to outer existence is somehow part and parcel of the datum. But we are also told that "when the datum is said to exist, something is added to it which it does not and can not contain—the finding of it, the assault, the strain, the emphasis, the prolongation of our life before and after it towards the not-given. These concomitant contributions of the psyche weight that datum, light it up, and make it seem at once substantial and incidental. Its imputed existence is a dignity borrowed from the momentum of the living mind, which spies out and takes alarm at that datum (or rather at the natural process that calls it forth), supposing that there is something substantial there, and something dangerous that will count and work in the world. But essences (as Berkeley said of his 'ideas') are inert" (pp. 179, 180).

Contrasting statements of this sort suggest the uncomfortable suspicion that the harmony among the Critical Realists is attributable to company manners, rather than to inward disposition of mind. Unless the language is misleading, we have here another cleavage, besides the one already discussed. On the one hand we are assured that Critical Realism "looks upon the total content as empirical, and is sceptical of the Kantian theory of the constitutive understanding" (p. 211). On the other hand we are met with the assertion that existence is a "concomitant contribution" with which the psyche weights the datum. Whether these statements admit of reconciliation, we need not pause to inquire. Whether apparent or real, this disagreement likewise may be used to clarify issues. Just what are we to understand by the assertion that the affirmation of thinghood or existence must be superadded to the content of perception?

Apparently the question raises a dilemma. If an additional element is superimposed from without upon the content of the datum by the affirmation, we get Kantianism; if nothing is superimposed, we get an empty form. Perhaps these two alternatives have not been kept consistently apart. On the surface the statement that there is a "sense" of outer existence, which is "indistinguishably fused" with the content of the datum, appears to be intended as an alternative to Kantianism. But if so, it is necessary to ascertain just what is gained by the manœuvre. The sensory qualities are already "present" by virtue of their status as experienced facts. But this "presence" is not what is meant by "existence." The "sense" aforementioned requires the affirmation of existence, but it furnishes no content or meaning for existence. It does not warrant the conclusion that "the special and invidious kind of reality opposed to appearance must mean an underlying reality, a *substance*; and it had better be called by that name" (p. 165), unless "substance" is taken to mean "existence" and nothing more. But bare existence adds nothing at all. A sensory fact which is merely present is not specifically different from a fact which has the affirmation of existence added to it. As Hume says, "To reflect on anything simply and to reflect on it as existent, are nothing different from each other. That idea, when conjoined with the idea of any object, makes no addition to it."² The affirmation of this ontological existence is supposed to be vital to the position of Critical Realism, but an examination of it discloses, if a Yankeeism may be pardoned, that it is the little end of nothing, whittled down to a point.

But this is not the only connection in which the problem of existence arises to trouble us. Correlated with these "external objects" are "mental states." These too exist, although "their data, the appearances they yield me, are to be distinguished from the mental states themselves" (p. 21). The belief in these existences, however, seems to rest on a different basis from that of the belief in external objects. The appeal is not to a "sense of existence," as in the case of outer existence, but is rather to inference, backed up by introspection (cf. pp. 25, 26, 234-237). The mental states must be held to exist, for they are needed as vehicles of the data or essences. Without the mental states we should be unable to account for the fact that data are sometimes given and sometimes not (pp. 26, 233). When we introspect, these states, ordinarily unnoticed, come to light. "I admit that an unfelt sensation, in the sense in which the word sensation is ordinarily used, is absurd; but

² *Treatise of Human Nature*, Part II, section VI.

I persist in thinking that *that which* we feel, when we feel, *i.e.*, distinctly attend to, a sensation, is capable of existing when it is not felt, and so does exist in all vision, hearing and touching of external realities" (p. 235).

The claim, then, that mental states are the vehicles of the data is intended to mean that the mental states give to the data that peculiar quality of "feltness" which distinguishes the given from the not-given. Data, to be sure, are not felt directly, since they are not existences. "It is well known that the chief factor in the visual perception of distance . . . is convergence and accommodation of the eyes. The sense that distance is actually felt may then be due to the fact that it is brought before us by the muscular sensations of convergence and accommodation. Distance, in that case, would be felt, but not visually felt. And the instance would constitute a beautiful example of the way external objects and relations are known by means of sensations which have in them little of the characters of the external things, but are simply used as signs" (p. 236).

It will be recalled that copyism is criticized by Critical Realism for attempting to pass from the given experience to outer existence by a process of inference. The same criticism, it would seem, is applicable to the attempt to justify the belief in mental states by a process of inference. Since the existence of these states is not intuited, they are as much "outer" to the data as any physical fact. Does it become known to us in precisely the same way? For example, of an ordinary perception, in which a blue object is presented, it is said: "Blueness here belongs to both datum and mental state" (p. 30). The reference to the physical object, as we have been told, is brought about by a "sense of outer existence." Must we then resort to a parallel "sense of inner existence," which is likewise "indistinguishably fused" with the datum, or is it necessary to resort to inference? Two such "senses" mixed up in one experience would look dubious enough, in all conscience; while the other alternative is made unattractive by the horrible example of copyism. But waiving this point, we come upon a further question, What is a mental state when we finally discover it? Since the given consists exclusively of "essences," of meanings or universals, it would seem that introspection can not disclose a "sensation of blue," but merely "blue." That is, introspection comes upon the same datum that, in the original perception, was assigned to the physical object. What then can be meant by saying that it is now found to be the character of a mental state? The only difference that is introduced by introspection consists in the discovery of a different context for the blue. It is now found to be associated with

"sensation of eye strain" and similar introspective material. But this does not convert the blue into something mental, or make the blue a clue to the existence of a mental entity, unless this connotation is smuggled in with the word "sensations." While we speak, indeed, of "sensations of eye strain," they too are, by hypothesis, essences or data, and their reference to the eyes is as direct and unambiguous as is the reference of blue to a physical object. If we classify these "sensations" in turn as mental on the score of *their* associations, it is plain that we become involved in an endless regress of essences. Critical Realism provides no content for the notion of mental states; which is perhaps the reason why it is not scandalized by the suggestion of unconscious mental states. If we stick consistently to the doctrine that the given consists of essences, there can be no room for existences of any sort, and both external objects and mental states go by the board.

This conclusion is emphasized when we examine the function of mental states in giving concreteness or vividness to the essences which enter into experience. It is clear that, if externality is made to depend upon an empty reference of essence to existence, it becomes necessary to invest these essences with the "tang" of sensibility, by virtue of which they become transformed from plain abstractions into living experiences. They must take on "concretion for discourse and for action" (p. 22). This process is supposed to be illustrated by Strong's "beautiful example" of the muscular sensations of convergence and accommodation which give us the appearance of visual distance. "The datum is sensibly vivid because it is brought before us by a sensation" (p. 237). Unfortunately the illustration fails to illustrate. The datum being what it is, how can vividness apply to it? "A meaning here is not to be understood as a peculiar kind of feeling that can be met with introspectively in the same way that a visual sensation or a pain can, but as a *function* which the feeling discharges in bringing us into mental relation to an external thing. When, having a sensation caused by an object in our minds, we are disposed (in virtue of the connected nervous arrangements) to act as with reference not to it but to the object, then that object is, in so far, before the mind as a datum" (p. 237).

The passage just quoted seems to reveal a significant inconsistency. Data are functions and so can not be met with introspectively, as it is possible to meet with a visual sensation or a pain. That is, a visual sensation or a pain is something different in kind from data or essences. If they are not essences, they must be existences, yet they can be the objects of our immediate apprehension. "There are states of our sensibility which do not bring before us

objects other than themselves—*e.g.*, anger or pain, or in some cases, chill" (p. 233). How this squares with the doctrine that existence is never given directly, I am unable to make out. A little reflection will show, however, that the general position requires some concession in this matter of sensations. A rigid adherence to the doctrine of essences would leave no room for vividness at all. Vividness must come in, not as a meaning, but as something immediately "felt," something that "constitutes its own object." If we were to limit our consideration of sensations to essences referred to mental states, as the theory requires, the whole procedure would remain coldly logical. Since Critical Realism ignores the suggestion that givenness may be connected with the functioning of the "essence," and not of the "mental state," it can account for the warmth and intimacy of sensory experience only by lapsing into the standpoint of traditional subjectivism, and it finds itself obliged to give new life to the dismal theory of unconscious mental states, which seemed in process of dissolution. The whole situation seems to be just another phase of the historic difficulty about sensations and relations; and the best we get is the unintelligible assurance that "a datum can be so concrete as even to have sensible vividness, and yet not be an existence, but only an entirely concrete universal, a universal of the lowest order" (p. 231). How low a universal of this sort would have to be, it would perhaps be indelicate to inquire.

The foregoing criticism may be summed up by saying that the doctrine of essences, which constitutes the distinctive feature of the position and which is relied upon as an alternative to both copyism and neo-realism, works havoc in the end, because it leaves no room for existence of any kind. It is a pleasure to concede many merits to the book. In view of the nature of its topic, it is very readable. It possesses many keen and suggestive analyses, and it is undoubtedly an important contribution. But that it offers an acceptable solution as it stands, I am unable to believe. In the presence of the historic tradition which requires that mind be isolated from its objects by a gulf which can be traversed only by a *claim*, Critical Realism lays aside all its sophistication and shows a striking capacity for simple faith. But, as I have tried to show, the book itself furnishes certain suggestions as to the lines along which an acceptable revision might be made. And it provides additional evidence for the view that the "external object," to which Critical Realism attaches so much importance, serves no purpose whatever except to give a certain dignity or esthetic sanction to the proceedings. But the authors have succeeded in making their position as plausible as the materials at their disposal would per-

mit, and in doing so they have done much towards the clarification of the important philosophic issues of the day.

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BOOK REVIEWS

Le Thomisme, introduction au système de S. Thomas D'Aquin.
ÉTIENNE GILSON. Strasbourg: A. Vix et Cie. 1919. Pp. 174.

It has become conventional among historians of philosophy to pass from the Greeks to the moderns, from Plotinus to Bacon and Descartes, much as if between there had been no speculating on earth "about it, and about." This attitude of mind is grossly provincial. It appears to be taken for granted that the great schoolmen of the thirteenth century, because they were theologians, could not be philosophers; whereas, remarks Professor Gilson, "une philosophie qui cherche à rejoindre une foi n'en est pas moins une philosophie" (p. 6). Indeed, to him the thirteenth century appears as rich a philosophical epoch as the epochs of Descartes and of Leibnitz, or of Kant and of Auguste Comte. As chief representatives of that rich period he cites Thomas Aquinas and Duns Scotus. It is to the *philosophical* system of the former that he will introduce his reader.

This system, like all great systems of philosophy, resulted from an effort to harmonize divergent spiritual tendencies of the historical moment. In a few broad outlines, Professor Gilson sketches the antecedents of the situation.

After Plotinus, there was for five centuries virtual philosophical silence. The two centuries of the Patristic period were altogether theological; the three centuries following were wholly given to practical issues, political and social reconstruction. Under Charlemagne this task was fulfilled. Under his aegis, also, revived philosophical speculation, thereafter to continue to modern times without breach of continuity. During the next four centuries, three considerable conclusions were arrived at, all three fundamental to the Thomistic synthesis: (1) recognition of the parallel validity of reason and faith; (2) solution of the age-long problem of "universals" by *conceptualism* demonstrating the sense-origin of concepts; (3) the so-called scholastic method of argumentation by enumeration of arguments *contra*, development of the solution proposed, refutation of objections already raised.

Opinion in this period, on the other hand, wavered uncertainly between Plato and Aristotle without clearly understanding either. Of Aristotle, especially, only the *Organon* was directly accessible. What

therefore wholly altered the situation were the Toledan translations of the *Physics* and *Metaphysics*, Avicenna's abridgment, and Averroës' commentary, all divulged at the beginning of the thirteenth century. But the Peripatetic system, now at last revealed in its wholeness, seemed to deny Christian faith in divine providence and the immortality of the individual human soul.

In consequence, Christian opinion again split. One faction, voiced principally by the Franciscan St. Bonaventure, asserted fundamental antagonism between the new Aristotle and Christian dogma. Aristotle's basic error lay for them in his rejection of Plato's doctrine of Ideas. If God possessed not in himself the Ideas of all things as exemplars, he must know himself only, and not particulars; which negates divine providence. Moreover, oblivious of his world, God could not have created it. Therefore it must be eternal. If eternal, there must have existed in it an infinity of men, and so there must be an infinity of souls; unless indeed the soul is corruptible, or the same souls pass from body to body, or there is but one soul—or intellect—for all men. According to Averroës, Aristotle accepted the last choice. Hence, obviously, Aristotle would deny the possibility of individual immortality and of future reward and punishment. St. Bonaventure and his group, accordingly, rejected Aristotle and all his works, and clung to the traditional Platonic-Augustinian exemplarism.

Another faction, in despair, renounced speculation by reason altogether, so setting up again the barrier between reason and faith. At the other extreme, a not inconsiderable group of intellectual radicals, defying imputation of heresy, accepted the Averroistic Aristotle *in toto*.

Against the anathema of the Church, these radicals could not prevail; but the very boldness of their stand in the name of reason was a warning. The manifest superiority of Aristotle's natural science assured its ultimate acceptance. If his metaphysics could be conformed to Christian dogma, that dogma would be the more strengthened by sponsoring his triumphant—and innocuous—physical doctrines. Otherwise, there was danger of heresy spreading.

Specifically, to Christianize Aristotle it was necessary, says Professor Gilson, to "réintroduire dans le système l'exemplarisme et la création, maintenir la providence, concilier l'unité de la forme substantielle avec l'immortalité de l'âme" (p. 12). The path-breaker towards this end was Albert of Cologne, called "the Great;" but although encyclopedic in scope, he failed to achieve in any proper sense a coherent and consistent philosophical system on the compromise bases. This achievement was reserved for

his disciple, Thomas Aquinas; and as evidence of St. Thomas's success, Professor Gilson alleges the fact that "après six cent ans de spéculation philosophique et malgré des tentatives innombrables pour constituer une apologétique sur des bases nouvelles, l'Eglise vit encore de la pensée de S. Thomas d'Aquin, et veut continuer d'en vivre" (pp. 13-14).

The method of St. Thomas's conciliation may be illustrated by a single instance. According to Aristotle, a future contingent can not be known, for as soon as known as true, it ceases to be contingent to become necessary. But to refuse God the knowledge of future contingents, is to make providence impossible. Aristotle's conclusion on this point is therefore inadmissible. Although disparity with dogmatic truth, however, motivates rejection of Aristotle's authority, rejection is not justified until reason can find support for the opposite conclusion. St. Thomas, accordingly, demonstrates by logical deduction that God can, and must, know future contingents (pp. 67-68).

The instance is typical; and from it the generalization may be made that St. Thomas incorporated into his system Aristotle's positions so far as these were compatible with Christian dogma; and if substitutions were made in the name of the Faith, these also were logically deduced from the premises of the system itself. So, to repeat, although St. Thomas be motivated by theological considerations, he still achieved in the strictest sense of the word a *philosophy*.

To evaluate in detail the outline of this philosophy given by Professor Gilson is beyond the competence of the present reviewer. It is at least delightfully candid, succinct, and clear.

There is, however, a point of query. Emphasizing as basic to Thomism, the restriction of human cognition to abstraction from the data of sense, Professor Gilson declares in his general conclusion: "Le platonisme trouvait dans la mystique son dernier achèvement, et il faut dire, au contraire, que dans la mesure où la mystique supposerait une intuition, et comme une expérience directe de Dieu par l'âme, le thomisme constitue la négation radicale de la mystique" (pp. 171-172). Perhaps in consistency this should be true; but St. Thomas was confronted with the case of St. Paul (II Cor. xii), and unqualifiedly concludes that the Apostle had in "rapture" immediate cognition of the divine essence. (Cf. *De veritate*, xii, 2; *Summa theol.* II-II, clxxiv, 4.) Now obviously, to admit the possibility of even a single "expérience directe de Dieu par l'âme" is to open the door to mysticism. Instance the Thomist Dante's claim to a similar intuition, which may be poetic fiction, but is no less recognition of the mystical potentiality of St. Thomas's doctrine.

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The Principles of Esthetics. DEWITT H. PARKER. Boston: Silver, Burdett and Company. 1920. Pp. v + 374.

It would have been achievement enough to have produced something like an adequate textbook on esthetics. But Mr. Parker has done more than this. He has written a book that makes profitable and pleasant reading alike for those unfamiliar with the subject and for those versed in its traditions and literature. For purposes of instruction, *The Principles of Esthetics* must, to be sure, be supplemented by works on certain aspects of the subject that are left entirely untouched—as, for example, the matter of the origins of art. But this deficiency is partially supplied by references in the bibliography appended. Moreover, the matters treated are quite numerous and varied enough for the compass of the volume.

Mr. Parker deliberately stresses psychological esthetics; or perhaps it might more properly be said that for him the subject is essentially psychological. "I use 'experience of art' 'esthetic experience,' and 'beauty' with the same meaning," he observes (p. 53). This bias does not prevent his giving in his later chapters an exceedingly good objective analysis of the structure of the several arts, taking up in turn, music, poetry, prose literature, painting, sculpture and architecture. In connection with the problem of evil, he considers the nature of the tragic, the comic, and the pathetic, treating these as so many methods of solving that problem. The last two chapters he devotes to the relation of art to morality and religion.

The book is essentially non-historical. To but a small extent is even reference made to traditional solutions of the problems considered. Mr. Parker's own solutions are, of course, by no means uniquely his, but in his handling he displays vigor, originality and freshness. Particularly good throughout the volume is the treatment of the antithesis of thought and feeling in the esthetic experience. Mr. Parker coins the word *einmeinung* after analogy with *empfindung* to express "the relation of the idea to the sense medium of the expression." "Feeling," he observes (p. 70) "is a function of ideas; if, then, we demand sincerity in the one, we must equally demand conviction in the other."

To those who relish a sincere, sympathetic, and human treatment of matters which may be made either too abstruse or hackneyed, this volume will be exceedingly welcome.

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JOURNALS AND NEW BOOKS

SCIENTIA. September, 1921. *Le comete secolari ed il moto del Sole nello spazio* (pp. 181-188): G. ARMELLINI (Padua).—It seems highly probable that all comets belong to the solar system. Even if a comet's orbit were found to be hyperbolic, we even then could not be sure it came from the remote depths of space. *L'émission d'électricité par les corps incandescents* (pp. 189-194): A. BONTARIC (Dijon).—Under the influence of heat, electrons escape from a body in a way analogous to ordinary vaporization, and this movement of negative particles constitutes an electric current. First studied from a purely theoretical angle, this phenomenon has now given rise to ingenious technical applications—showing again the unexpectedly practical value of highly theoretical inquiries. *The Chemical and Biological Differences in Proteins* (pp. 195-200): R. H. A. PLIMMER (Aberdeen).—Somewhat technical paper pointing out the inadequacy of our knowledge in this field. *La question de l'union de l'Autriche allemande à l'Allemagne* (pp. 201-212): BERTRAND AUERBACH (Nancy).—Purely historical sketch of the relations of Austria to Germany in the period just before the Treaty of Versailles. *Psycho-vitalisme et hypothèse mnémique* (pp. 213-217): "VERNON LEE" (Florence).—Review of the work of Richard Semon, defending his theory of organic memory as truly scientific and not obscurantist. *Reviews of Scientific Books and Periodicals*.

de Miranda, Pontes. *A Sabedoria dos Instintos; Idéas e Antecipações*. Rio de Janeiro: J. Ribeiro dos Santos. 1921. Pp. 238.

Mitchell, T. W. *The Psychology of Medicine*. London: Methuen & Co. 1921. Pp. 187. 6 sh.

Ralph, Joseph. *How to Psycho-Analyze Yourself: Theory and Practice of Remoulding the Personality by the Analytic Method*. Long Beach, California: published by the author. 1921. Pp. 318. \$5.

van Velzen, H. Thoden. *Force Curative*. Geneva: S. A. des Editions Sonor. 1921. Pp. 30.

NOTES AND NEWS

CONFERENCE ON PHILOSOPHY AT THE UNIVERSITY OF TORONTO

Sir Robert Falconer, President of the University of Toronto, on behalf of the Department of Philosophy extended an invitation to several prominent leaders to take part in a conference on Jan. 17, 18 and 19 to discuss philosophical problems. Some of those

invited were unable to attend; but a sufficient number were present to make possible an interesting programme, planned to secure a presentation and discussion of contemporary tendencies.

The proceedings were opened by a general statement of the import of modern philosophy by Professor Woodbridge of Columbia. He developed the thought that at first both medieval and modern philosophy were mainly engaged in the task of translating earlier—especially the Greek—speculations into the Latin and modern languages. Later the modern philosophers discovered that they must get beyond terms and terminologies and explore the real subject matter of philosophy, *i.e.* actual human experience. Out of the earlier effort to state and formulate, and the later one to explore and investigate, there grew up a healthy rivalry or “criticism” which has kept modern philosophy alive and moving. Whether this movement is a forward and progressive one or not is to some still a matter for debate.

Professor Shastri of Calcutta, followed with an exposition of the various schools of eastern philosophy and their inter-relations in a manner which showed his intimate knowledge of this subject.

In the evening a public lecture was given by Professor Hocking of Harvard on “Philosophy and History.” It was skilfully shown that history must eventually endeavor to interpret events in terms of mind. When certain notable changes took place, not foreseen or humanly planned for, it was once customary to invoke for explanation Chance, or Fate, or Providence. Later on, much more stress was laid upon “economic pressure.” After analyzing the elements in the term “economic” and admitting its tremendous significance, he pointed out that these economic agencies are not mere blind forces, utterly uncontrollable, but that, wherein they succeed, in the long run it can be shown that this success is intimately dependent on the fact that they are entitled to succeed, because fulfilling some social or moral need. Further, it was shown that the chief moral-social requirement centers upon the recognition of the infinite worth of the individual soul or personality, and that to teach this recognition and its consequent duties is the highest expression of that longing for religion that is found through all human history.

On the second day Professor Hocking took the lead with a presentation of evil from the realistic standpoint. This led to the suggestion of a more adequate view, where evil is indeed admitted to be genuinely evil, but where it is also more than merely existent as a permanent opposition to good. What we call evils can be dealt with in such a way as to become “something more” than merely evil.

Professor Creighton of Cornell gave a presentation of the philosophical meaning of intelligibility, wherein he differentiated philosophy from the explanations current in the special sciences and indicated how philosophical criticism is not merely destructive, but also constructive.

In the evening Professor Shastri contrasted Eastern and Western tendencies in thought and civilization, and pleaded for a more adequate mutual understanding and a closer coöperation between East and West.

On the final day of the conference, a good debate was secured on the fundamental differences between the realistic and the idealistic tendencies. Professor Woodbridge clearly stated how this opposition arose out of the emphasis of Descartes on certainty, the emphasis of Bacon on power. Professor Hoeking maintained the possibility of a reconciliation, not by any superficial or external synthesis, but by widening our interpretation of direct or immediate experience so as to find in it a dialectical process seeking the "that" of certainty, and an experiential process seeking the "what" of content. Out of this suggestion grew a spirited discussion of the import of "intuition" and of how to discriminate between a pseudo-problem and a genuine problem in philosophy. Professor Creighton summed up the debate by claiming that though there might seem to be an opposition there was no real contradiction between the logical process of proof and the intuitional; that, in fact, logical proofs became concentrated or vitally synthesized in an "intuition," which was not an abandonment but a consummation of the logical. An "intuition," then, is concrete and includes in it a logical factor.

In the evening a delightful lecture was given by Professor Creighton, showing in a lucid and interesting way the contrast between the eighteenth and nineteenth century in philosophy, literature and civilization.

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THE JOURNAL OF PHILOSOPHY

THE IDENTITY OF INSTINCT AND HABIT

TWO years ago, in a brief paper entitled *Are There Any Instincts?*¹ I questioned the usefulness of the conception of instincts then prevalent in psychology, pointing out that while there are many reaction patterns which may legitimately be called instinctive—if by instinctive we mean *unlearned*—these reaction patterns are not combined in the so-called instincts in any exclusive way, but that the same reaction pattern occurs in several of the instincts, and that in some of the instincts practically all of the reaction patterns, learned and unlearned, which the animal possesses, function at one time or another. The “instincts,” I concluded, are teleological groupings of activities, not psychological groupings. They are teleological, in that they are grouped with reference to the ends attained by the complex activity: not ends that the acting animal holds as conscious purposes, but ends that the classifier (the psychologist, biologist, philosopher, or whoever draws up the list of instincts), considers as attained by the activity in question. Lists of instincts, therefore, represent no fundamental psychological processes, but merely the convenience of the classifier: and any list which is convenient is as valid as any other list.

Since this heretical assault upon a widely held doctrine was delivered, a considerable number of writers have taken up the cudgel against instincts; and there seems to be danger that denunciation of instinct will become as fashionable and as uncritical as the acceptance of instincts has been hitherto. In particular, there seems to be a tendency to make no discrimination between instinctive activity, instinct, and instincts; but to assume that rejecting the last of these disposes of the others. It may well be that there is such a thing as instinct, namely, action determined solely by the environment (stimulation pattern), and the constitution of the animal; and that hence certain actions are properly called instinctive (without regard to what they accomplish in the world, of course); although the “instincts” are purely arbitrary groupings of activities. A recent author,² in fact, while rejecting the whole conception of instinct, reinstates instinctive activities under the changed names of inherited

¹ *Journal of Abnormal Psychology*, 1919, Vol. 14, pp. 307-311.

² Zing Yang Kuo, “Giving up Instincts in Psychology,” this JOURNAL, 1921, Vol. 18, pp. 645-664.

"action-systems," defining these in precisely the same way in which we would ordinarily define instinctive tendencies.

It seems to me, therefore, necessary to state a little more carefully the objections to the old use of "instincts" in psychology, and also to add the consideration of certain objections to the antithesis usually assumed between instinct and habit, especially since these latter objections have not been raised by any of the recent authors to whom I refer. In my present view concerning this relation of instinct and habit, I am in part indebted to Dr. Ulrich,³ although I must confess that the suggestion comes to me not from his important monograph, but from personal discussion with him of matters contained therein. I hope I may be pardoned if I repeat somewhat, and if I seem to introduce rather elementary illustrations, for I now feel that it is better to be a little tedious rather than run the risk of not making my point understood.

Psychologists have got into the habit of contrasting instinct and intelligence. From that they have gone on to the custom of speaking of specific instincts as if they were really separable entities;⁴ a habit that was wished upon psychologists by a variety of men: philosophers, students of animal behavior, etc. The machinery of instincts so constructed has been seized on by several psychologists as ready-made apparatus for the construction of social psychology, and it behooves us to look rather carefully, if necessarily somewhat hastily, into the whole question of instincts, which, of course, we have to separate from instinct and from instinctive reaction.

We find in the animal, human and infra-human, tendencies to react in certain ways to certain stimuli: tendencies to make certain definite responses to certain definite features of the environment. For example: At a certain time the bell rings, whereupon the students in my room gather up their books and file out through the door. There is thus demonstrated a tendency to react in a particular way, however complex, to a particular stimulus pattern, which in this case happens to be a relatively simple one. The reaction, of course, was not in existence during the time immediately preceding the ringing of the bell. The students, however, did have the tendency. It may not have been in existence during the whole of the hour preceding the action, but certainly a number of minutes before the bell rang the tendency was there, ready to play its part in bringing about the action. A tendency, we may assume, is a certain arrangement in the nervous system; what Stout and others have

³ "Integration of Movement in Learning in the Albino Rat," *Psychobiology*, 1920, Vol. 2, pp. 375-448, 455-500; *Journal of Comparative Psychology*, 1921, Vol. 1, pp. 1-96, 155-199, 221-286.

⁴ The separation of intelligence into different intelligences has not been so easily accepted, although that separation has been proposed.

called a *disposition* of the nervous system: something which is definitely in existence, whether we describe it as a physical or chemical arrangement. It is because of this arrangement in the nervous system that the stimulus produces the response. That the "disposition" exists as an organic fact, is further proved by the fact that the reaction, in a case such as we have described, may be predicted.

As an illustration of the relation of "disposition," or "tendency," to response, we may consider an electric door bell and its operation. We press the button and the bell rings; because there was a mechanical arrangement of parts, an existing "disposition" of the sort that made the response (the transmission of the current and the ringing of the bell) possible when the stimulus (the pressing of the button) was applied. We mean by the "tendency" of an animal to react in a certain way to a certain stimulus, nothing more occult than the "tendency" of the bell to ring when the button is pressed.

In the human animal some of these tendencies are tendencies to perceptual reactions. If a certain canvas with certain paint smears on it is presented to one man, he perceives a genuine Tintoretto; while another person to whom is presented the same canvas perceives only a dreary daub. Why? The two men have different perceptual tendencies. There is a tendency on the part of one man to react to that stimulus in one way; and the other man has a tendency to react in another way.

Men have also divergent emotional tendencies. One man, while watching a certain scene on the stage, has an emotional result which we might describe as "interest, with mild pleasure"; another man reacts with a sad emotion, akin to grief. This difference can be stated as due to a difference in tendencies which have previously been established, so that the same stimulus pattern produces the responses in accordance with the different tendencies.

There are also thought-tendencies, as definite as the perceptual and emotional tendencies. If I mention Plymouth Rock to a group of people, some of them may think of chicken-runs, incubators, broilers, and market reports, while others may think of a stern and rock-bound coast, where the breaking waves dash high; depending on the particular tendency existing in the individual who is stimulated.

It is customary to divide or group these tendencies under two headings. We class them as instinctive, native, or inherited on the one hand, and habitual, learned, or acquired on the other. It is further customary to use the term "instinct" in a general way to indicate the existence in any animal of native reaction tendencies, "habit" in a corresponding way to indicate the existence of acquired

tendencies, and "intelligence" to mean the capacity to acquire or to modify reaction tendencies. With these methods of speech we have no quarrel, and may accept the terms as defined.

But there is a further custom of speaking of certain groups of instinctive tendencies as *instincts*. This usage is by no means a necessary consequence of those just described. We might use the term instinct in a general way, and speak in particular of instinctive reactions, and yet not speak of "an instinct" or "instincts" at all. The conception of instincts has been constructed, however, and various lists of "instincts" have been compiled, and we have come in a rather naïve way to speak of this or that "instinct" as if they were separable entities: either groups of reactions, or tendencies toward certain complex reactions. We speak of the "nesting instinct" of the bird, the "instinct of flight," the "parental instinct," etc., through various lists, these lists ranging all the way from those including but two instincts: the self-preservatory and the reproductive or race-preservative; through the list of four which Trotter considers adequate; to McDougall's list of twelve, and the list of Thorndike, which includes an indefinite number between ten and twenty.

The enumeration of such lists does not necessarily involve the distinction of "instincts" from simpler tendencies; but in the hands of all those who have constructed "fundamental" lists, such a distinction, as a matter of fact, is involved. Practically all of the compilers of lists have refused to admit to the group of "instincts" the simple reflex, such as the knee jerk, and many more complicated native reactions, such as the sucking of the child.

Criteria are therefore devised in order to distinguish instincts from other non-acquired tendencies. Most of the classifiers object to defining an instinct as a mere group of reflexes. McDougall assumes that consciousness is involved; that there are essential conscious elements in an instinct; and does not accept as an instinct an unconscious reaction, however definite. In a partial way, McDougall makes emotional accompaniment a criterion. In a certain number of the twelve instincts, at least, primary emotions are assumed to be involved. The instinct of flight involves the emotion of fear; repulsion involves disgust; curiosity, wonder; pugnacity, anger; self-abasement, subjection; self-assertion, elation; the parental instinct, tender emotion.

It is not my intention to discuss the various criteria of instinct; I merely mention these as illustrating the way in which psychologists have taken the term "instincts" in the plural, as contrasted with "instinctive reaction," which has not the same meaning.

From a purely physiological point of view, there are no instincts.

There are groups of re-activities (including not merely the end result, muscular and glandular activities, but the whole process in the nervous system and effectors), into which the minor groups enter in varying conditions. In the activities of flight, food-getting, and fighting, as they actually occur, when the "tendency" passes over into action, the same running movements may be present. To a large extent the running movement in getting away from some object which is inimical to the animal, the running movements in going after food of an elusive type, the running movements in pursuing an enemy, may be practically the same. In general, the same minor complex may enter now into this, now into that complex which is called an instinct, or the eventuation of an instinct. Some so-called instincts are at times entirely included in other instincts. For instance, flight, pugnacity, and food getting, taken just as groups of reactivities, may each occur as part of the parental instinct, since the parental instinct involves not merely the begetting of children, but also the procuring of food for them, and the fighting in their defense, and even the running away with a child at times, if danger is too threatening. We would have, then, from a physiological point of view, the instinct of flight and the instinct of pugnacity as parts of the total complex which would be called the parental instinct. It seems to me, moreover, that practically all of our activities enter at some time or other into the so-called reproductive instinct; and there are perhaps instances where the relation is reversed: where instinct *A* at one time includes instinct *B*, and at another time instinct *B* includes instinct *A*.

This inclusiveness and overlapping nature of the so-called instincts is not the point of greatest difficulty in classification. The really obstructive difficulty lies in the indefinite shading of one instinct into another. For example, between flight and pugnacity, even when it is not a question of their being included in some other instinct, the lines are by no means sharp; for between the two there is a continuous gradation of intermediate instincts.

If we attempt to distinguish instincts by the accompanying emotions, we again find difficulty. Fear, for example, appears sometimes as self-abasement, and shades by gradations into wonder. Moreover, fear is involved in a number of the instincts: the parental, the gregarious, and sometimes in the acquisitive. So also the subjective emotion and the emotion of elation are both found at times in the reproductive and parental instincts, and in the pugnacious instinct. I should say, moreover, that there are indefinite shadings of emotions between fear and disgust. The withdrawal from a situation may not involve fear alone or mere disgust, but may be marked by something between the two. So also there seems to be indefinite

shadings between fear and wonder, and fear and anger. It might be said that these shadings are mixtures; that we have in one case a mixture of fear and anger, and in another case a mixture of fear and wonder. That may be true. But we have no clearly marked "elemental" fear, or "pure" anger. Fear itself seems to be a complex which varies widely, and seems to contain elements which are also contained in anger and various other emotions, and at the present time it is safest to regard each of these so-called "primary" emotions as a complex of several elements, some of which are common to several emotions; and to regard the particular emotion present at any time as dependent upon the relative strength of the components. Excitement, for instance, is sometimes present in fear and usually in anger. Again, most of these "primary" emotions, such as fear or anger, are apparently of several kinds. The fear you have when you start running immediately does not *seem* of the same sort as the fear you have when you are struck immobile, and it is a question worth considering whether these *are* the same fear. To me, retrospection shows that they are not the same. Again, flight might occur without fear, or at least without the kind of fear which is usually associated with flight. I have found myself running, after a motor car has honked beside me on a street crossing, and yet have not found the inner content which I call fear. The emotion in such cases I should call "startle" or "being startled"; but not "fear."

I think the assumption that there is a very simple or constant thing to be called fear, another to be called anger, and so on, is certainly a dangerous one. If there are such constant things, the evidence so far does not demonstrate it. I can not see at the present time any great hope for the evolution of a list of "instincts" on the basis of the emotions.

If we should now attempt to distinguish reaction-tendencies on the basis of desire, or the purpose of the reacting animal (not the purpose of the classifiers), we might be on a better foundation. I think, myself, there is a distinct possibility there, and have been working on this line for several years. I should say, however, that in this we are getting away from the instinct basis altogether: that the classification of activities in accordance with their furtherance of desires is a very different problem from that in which McDougall, Watson, and Trotter have been interested. Such a system of distinction would depend, not on a primary classification of activity groups, but on a working out of the total activities of the organism now in this way, and now in that, from a strictly psychological point of view.

The actual basis of all the suggested lists of instincts is in the purposes of the *classifier*, not in the purpose of the *reacting animal*. All the unlearned activities of the animal which the classifier views

as contributing to the obtaining of food are considered by him as the "feeding instinct." All of those which, from the point of view of the classifier, culminate in the perpetuation of the species, are considered the "reproductive instinct." Any end or purpose which the classifier considers as important enough to set over against other ends is the point of departure for the erection of "an instinct." This is the teleological method, not the psychological. Now, from such a point of view, the classifier may erect as many instincts as will accomplish his own purposes. There is no reason for objecting to a "mathematical instinct," unless you do so on the ground of universality. There are results in the world which involve getting together the mathematical relationship of things, and the tendency to work towards these results is native to some people, if not to all. The "musical instinct," the "religious instinct," and many others, are also widely distributed. There certainly is such a thing as religion and activities which produce certain results which are designated as religious, and if we judge by history and by contemporary events, tendencies toward these sorts of activities are universal, and have a native basis in the constitution of human organisms. There is also a tendency in the human animal to construct a political system.

The popular writers who construct any instincts they please are quite in accord with the general system of instinct classification. In using the term "an instinct," you must conceive of a definite and describable type of result which may be attained by activities of various sorts, and assume that some of these activities are unlearned. Any system of classification which is adequate for your purpose is quite valid. A list of instincts is a good deal like a filing system: you may file all your documents under the letter of the alphabet with which the name of the writer begins, or you may file by subjects, or by dates. One system is useful in one business, another is more useful in another business. But an industry can not be founded on a filing system; neither can a system of social psychology be founded on a classification of instincts.

But after all, this difficulty with instincts is only a minor one. While I am glad to see that many persons interested in social psychology are beginning to doubt the usefulness of specific instincts as bases for work, I think there is a still graver difficulty in the whole question of instinct and instinctive reactions, a difficulty which rather seriously concerns not only the foundations of certain types of social psychology, but also some of our conceptions of education and eugenics.

We have been so far assuming that there is a fundamental difference, in human and other animals, between instinctive and acquired

reactions. Instinctive reactions we have tentatively supposed to be native tendencies to respond to stimuli in specific ways; and acquired reactions are supposed to be those tendencies which are derived from previous reactions and innate dispositions together. Starting with a tendency to some definite reaction to a definite stimulus, various other reactions modify this tendency and eventually an acquired tendency, distinguishably different from the original tendency, arises.

This conception of the two classes of reactions, easily accepted in the past, is indeed questionable. In the life of the higher animal, there are seldom, if ever, simple reactions to simple stimuli. The actual occurrences are complex stimulus patterns and complex reactions. We find some reactions, such as the knee-jerk, in which both stimulus and reaction are relatively simple; and some, such as the infant's sucking reaction, in which the stimulus seems simple, although the reaction is complex. But in the main, the actual adjustments of the organism to its environment are complex in both respects, and even the sucking reaction involves more of a stimulus pattern than we ordinarily suppose.

The stimulus pattern of an instinctive reaction, as such reactions are usually conceived, is assumed to be a purely spatial one: that is, not temporal also. In such a reaction, only the stimuli of the movement are effective. In the instinctive flying of a bird, assuming such to occur, the visual, tactual, kinesthetic, and perhaps auditory stimuli of the moment are assumed to be effective: the stimuli of preceding minutes, hours, and days, and the reactions evoked thereby, are assumed to be negligible. If these preceding stimuli and reactions do contribute to, or modify, the reaction, then the reaction is in so far not instinctive, but learned.

The characteristic of the learned reaction is just the temporal stimulus pattern. In playing billiards, for example, the movements of the arm and body are the results not of the stimulus of the moment alone, but are the results of a stimulus pattern which extends over a long period of time, perhaps months or years.

But both of these reactions, the acquired reaction and the so-called instinctive one, are equally "native." Suppose that a child is given a small piece of sandpaper at an early age, and that he puts that in his mouth, and subsequently cries. If the piece of sandpaper is given him repeatedly, the child eventually will react in a quite different way. Instead of grabbing the sandpaper, he will turn his head away and cry, and go through other reactions which express his intention of not putting the sandpaper in his mouth. The sandpaper in this case is the stimulus. At the first presentation, when the child put it in his mouth, we have a so-called instinctive reaction. At the last presentation, when he does not put it in his mouth but

does something else, we have a so-called acquired reaction. At the first time, it is assumed by current theory, the child's nervous system was so disposed that that particular stimulus, regardless of other stimuli preceding it, caused that particular reaction; and at the last time the child's nervous system was so constituted by heredity and the results of repeated stimulation, that the same stimulation at that particular time produced a different reaction. In the one case, there is a spatial, in the other a temporal, pattern. But after all, are not the two cases of the same kind, and equally "instinctive"? Is the difference between a temporal pattern and a spatial pattern great enough to be made so important, even if we should admit the possibility of a purely temporal pattern? The general statement of the reaction tendency in the two cases is much the same. If it is true that the child's organism, at the first trial, is so constituted by heredity that the first stimulation produces the first reaction (putting the sandpaper in the mouth), is it not equally true that his organism is at that moment so constituted that another stimulus (the repeated presentation of the sandpaper) will produce another reaction (avoiding the sandpaper)? Are not both reactions equally "instinctive"? Is not the reaction to a temporal stimulus pattern just as "native" as the reaction to a stimulus pattern merely spatially conditioned?

But, the reader may say, admitting that all reactions are equally "instinctive," both are not equally "acquired." Admitting that the second reaction is as fully native as the first, is there not something more in the second, or in the condition of the second? Even this we may very seriously deny. After all, there is no such thing as a "merely spatial" pattern: all patterns are temporal, and all reactions equally "acquired."

Let us consider such a complex reaction system as the nest-building of the robin. How could this occur without preceding stimuli and reactions involved in the processes of feeding, flying, *etc.*? Suppose the bird had not gone through this preceding reaction series. Can we assume that his nervous system could have developed to the point where the nest-building tendency would appear? We can not. In other words, a temporal pattern extending far back of the beginning of the nest-building, is involved; and our basis for distinguishing between this sort of reaction and habit completely disappears.

Suppose we consider some of the less complex reactions: the sucking reaction of the child, for example. Suppose the child had not first been stimulated by cold air, and pressure, in such a way as to produce the crying reaction: could the sucking reaction have been evoked later? Here, again, we can not get away from the effects

of preceding stimuli. In this case it might be said that we are not dealing with a specific effect on the nervous system in the way of modification, but with the preservation of the integrity of the nervous system. But this is a distinction without a valid difference. We are concerned with a condition in the nervous system which makes a certain specific reaction possible, and any other stimuli which are essential to putting the nervous system in such condition, or to maintaining it in such condition, through the reaction evoked, must be considered as a part of the stimulus pattern. Our knowledge of the nervous system does not permit us to go beyond this point.

At the present time, I can see no way of distinguishing usefully between instinct and habit. All reactions are definite responses to definite stimulus patterns, and the exact character of the response is determined in every case by the inherited constitution of the organism *and* the stimulus pattern. All reactions are instinctive: all are acquired. If we consider instinct, we find it to be the form and method of habit-formation: if we consider habit, we find it to be the way in which instinct exhibits itself. Practically, we use the term *instinctive reaction* to designate any reaction whose antecedents we do not care, at the time, to inquire into; by *acquired reaction*, on the other hand, we mean those reactions for whose antecedents we intend to give some account. But let us beware of founding a psychology, social, general, or individual, on such a distinction.

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MUST WE GIVE UP INSTINCTS IN PSYCHOLOGY?

IN a recent number of this JOURNAL (Vol. XVIII, No. 24) there appeared an article entitled "Giving Up Instincts in Psychology" by Mr. Zing Yang Kuo, of the University of California, in which the writer argued not only that instincts have been overworked as explanatory concepts in psychology, but that, as a matter of fact, there are no such things as instincts in human nature. This point of view and many of the considerations urged in behalf of it are interesting and stimulating. There are several points, however, at which the writer's argument appears to me to be loose and open to attack. For example, emphasis is laid on the fact that "there is no general agreement among the students of instincts as to the number and kinds of instincts." That there is such a lack of general agreement among students of instincts no one would deny. But this does not imply the non-existence of instincts; it merely reflects the lack of scientific accuracy and completeness in this field of investigation.

This lack of accuracy and completeness in enumerating and classifying the instincts is doubtless due in part to the relatively short period of time that instincts have been made the objects of scientific study. It may also be due to the specialized and partial points of view from which instincts have been considered. Students in this field have for the most part been concerned with instinctive tendencies as these are implicated in various social processes and institutions. It was inevitable, because of this circumstance, that confusion and differences should arise with reference to the number and kinds of instincts. But this confusion and these differences may be expected to gradually pass away as methods of study become more refined and the points of view from which investigations are made become more objective.

Again, the writer attempts to establish an analogy between the theory of instinct as implying *a priori* relation of the organism to the environment and the theory of innate ideas; and argues that one is as objectionable as the other. He says: "To assume any inborn tendency is to assume *a priori* relation between the organism and stimulating objects; for every behavior is an interaction between the organism and its surrounding objects. Such an assumption is no less objectionable than the theory of innate ideas. As a matter of fact both the theory of instinct and that of innate ideas are based on the same conception; namely, the conception of *a priori* relation of the organism to external objects" (p. 648). Now if we are warranted in speaking of an inborn tendency as implying *a priori* relation between organism and environment in an objectionable sense, a very large part of the structural and functional equipment of the organism must be regarded as involving the same implication. Relations between the organism and the environment in the way of behavior depend on and presuppose the skeletal system, vital organs, receptors and limbs quite as much as they depend on and presuppose tendencies to action, whether innate or acquired. There is a sense of course in which these relations may be said to be *a priori*, namely in the sense that the structures and functions which they bring into operation are fitted in advance of experience to interact with the environment in significant ways. But there is nothing mysterious or miraculous about *a priori* capacities in this sense. They represent the selective influence of the environment on the life stream from which the organism springs. And whatever there is of *a priori* character about an inborn tendency, *i.e.*, an instinct, is to be accounted for in the same way. Innate ideas, however, when they have been ascribed to the mind, have not been thought of as being *a priori* in this sense. Rather they have been referred to some transcendental source which has been set over against and contrasted

with the empirical and biological agencies conditioning our natures. Mr. Kuo's contention that "both the theory of instinct and that of innate ideas are based on the same conception; namely, that of a *a priori* relation of the organism to external objects," overlooks the fact that the *a priori* character of the relation in the two cases is entirely different.

Furthermore, it would seem that while Mr. Kuo rejects the notion of an "inborn tendency" because it implies a *a priori* relation of the organism to the environment, he nevertheless is forced to presuppose this conception in accounting for the development of behavior. More specifically, it is admitted that "the human infant is endowed with a great number of units of reaction" (p. 658); and by "units of reaction" is meant the "elementary acts out of which various co-ordinated activities of later life are organized" (p. 658). Now these "units of reaction" or "elementary acts" must be presumed to involve innate neural tracts making possible just these responses and no others, however simple and undifferentiated in character they may be. We may call these responses "spontaneous" or "random"; but these are relative terms. They do not imply that we regard the responses in question as being accidental or unconditioned. We call such responses spontaneous or random because they do not seem to us to fall into any purposive system. And yet, they serve this purpose at least: they are the stuff out of which, as Mr. Kuo says, "the co-ordinated activities of later life are organized." At any rate, these "units of reaction" or "elementary acts" with which the individual is endowed at birth presuppose neural tracts which can only be described as "inborn tendencies" *i.e.*, tendencies to perform certain definite responses and no others; and as such they imply a *a priori* relation between organism and environment of the same character which Mr. Kuo rejects in the case of instincts. Indeed, these "inborn tendencies" which become overt actions upon the presentation of the appropriate stimuli, are called, in another connection, "non-specific instincts" (p. 658). Whatever we may call them, they differ from instincts, as commonly understood, not in the fact that they are irrelevant to environmental conditions as represented by the stimuli which excite them, whereas instincts involve inborn tendencies which are relevant to the environment; but in the fact that they are not organized into systems serving specific biological ends.

But the argument at another point seems to me to imply the existence of instincts in this more specific and purposive sense. I have in mind the interpretation given Spaulding's experiment on the flight of birds. "That the birds could fly without previous education," says Mr. Kuo "was rather due to the maturity of reaction

system. . . . Given a mature reaction system and given an environmental demand, a definite reaction can fairly be predicted" (p. 653). Now it is important to know just what the writer means to include within such a "reaction system" which is capable in advance of all education, when properly stimulated, of executing an intricate and significant action such as full-fledged flight. He speaks of the particular "reaction system" utilized in the flight of Spaulding's birds as including "wings and other flying mechanisms" (p. 653). What are these other "flying mechanisms"? Do they not include nerve centers and nerve connections? And if so, must these not be thought of as forming and ripening in advance of experiences having to do with flight? To account for their tendency and ability, and the tendency and ability of other mechanisms involved, to execute adequate flying movements by reference to their maturity is beside the mark; the question is, did this state of maturity result from former efforts to fly? If not (as in the case of Spaulding's experiment), it must have developed out of conditions which were present in the organism at birth; in which case, I do not see that the notion of instinct can be excluded from a scientific interpretation of the facts.

It is true, of course, that any action, instinctive or acquired, is conditioned by the presentation of an appropriate stimulus. But the stimulus is not the cause of the action; there is no mechanical equivalence between the stimulus and the response that we are able to make out. It is only a cue for the execution of movements provided for in some "reaction system." And given the stimulus and the "reaction system" we can predict the response to be expected only if we have in mind the purpose served by such mechanisms as are under consideration. We can be certain, for example, that birds kept in small boxes until their wings and other flying mechanisms have matured will fly when there is an environmental demand for this action, because we know in advance that wings and the mechanisms connected therewith are developed for flying. Without this advance information, turning the birds loose in the air with nothing to support them might, for all we could tell, result in any other action as well as in flight. And so it is in the case of any combination of stimulus and "reaction system": our ability to predict a definite response always presupposes an insight into the functional character of the relationship involved. Mere knowledge of the stimulus as a brute fact and of the reaction mechanisms as so many structural entities is not sufficient. This means that the primary condition of significant activity, as well as of spontaneous or random movement, is internal rather than external. Whether we think of this condition in terms of McDougall's "drives" or "springs to action" or in terms of Mr. Kuo's "reaction systems," the emphasis falls on the neural struc-

tures of the organism rather than on environmental factors. And however complex this inner tendency to action is, and however much of its complexity and significance it may owe, at any moment of its history, to the modifying influences of education or training, it presupposes a minimum core or foundation in the inherited structures of the organism without which it could not have had a beginning. The minimum core or foundation thus presupposed, in so far as it is inborn, and in so far as it makes possible significant interactions with the environment, is, it seems to me, on the basis of Mr. Kuo's own argument, deserving of the name "instinct."

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THE MODIFICATION OF INSTINCT

IN an article on "The Modification of Instinct from the Standpoint of Social Psychology," published in the *Psychological Review*, volume 27, 1920, pp. 247-69, I took the position that instinct could be modified by habits formed prior to the instinct's appearance. As a partial support for this view, I cited the following observation made by C. O. Whitman upon pigeons:

If a bird of one species is hatched and reared by a wholly different species, it is very apt when fully grown to prefer to mate with the species under which it has been reared. For example, a male passenger-pigeon that was reared with ring-doves and had remained with that species was ever ready, when fully grown, to mate with any ring-dove, but could never be induced to mate with one of his own species. I kept him away from ring-doves a whole season, in order to see what could be accomplished in the way of getting him mated finally with his own species, but he would never make any advances to the females, and whenever a ring-dove was seen or heard in the yard he was at once attentive.

Professor H. A. Carr, in editing the Whitman manuscript, also directed attention to the principle involved. Since the publication of my paper, this interpretation has been questioned first by Professor James Leuba in private correspondence and last by Mr. Zing Yang Kuo, in a most interesting paper upon "Giving up Instincts in Psychology," this JOURNAL, Volume 18, 1921, pp. 656-7. The criticism urged is that the behavior of the pigeons so modified was not an instinct but a habit. The passenger-pigeons' choices of mates from their own species are themselves, so it is said, the result of training and association and are not innate. Therefore, so the conclusion runs, we do not have the modification of an instinct, but merely the supplanting of one habit by another.

The proper understanding of much human and animal behavior depends to such an extent upon the principle here involved that I wish to suggest the answer to the problem as I see it:

For the principle concerned, it makes no difference whether the specific choice of mates by normally reared passenger-pigeons is chiefly inherited or acquired. The modification brought about is of the same general type as that found in the conditioned reflex, save for the temporal location of the modifying influences. Whitman's observation gives us a case which is scientifically described and convenient to use, but illustrations might be drawn as well from man's sex choices, from the field of sex education, and elsewhere. The sex instinct consists of those motor and glandular activities whose occurrence is due to an inherited synaptic connection giving certain sensory impulses ready access to the necessary final common paths. The instinct is certain behavior set up in muscles and glands. It is not a stimulus, nor yet an inherited synaptic connection, but is aroused by the former and controlled by the latter. Considered most accurately the *instinct* is not modified unless effector activities are changed. We are considering, however, as others have considered, the modification of the total inherited stimulus-response situation. The immediate problem is whether or not habitual associations formed prior to the appearance of the instinct have set certain stimuli as the ones which will be effective in arousing the instinct.

The detailed stimuli arousing sex behavior are unknown. In general, however, two classes of stimuli are involved: visceral sensory impulses corresponding to appetite, or desire, on the conscious side; and somatic sensory impulses aroused by the external object or by the symbol which represents it. It is probable that in many animals there is not a high degree of specificity on the somatic sensory side and that these factors are supplied to a high degree by the experience of the individual. However, the chance selection of somatic avenues seems to be weighted in favor of cutaneous, olfactory and possibly visual stimulation, *i.e.*, the somatic avenues do not seem to be equally open. On the visceral sensory side there seems to be an undoubted native connection between internal secretions and the appearance of sex responses in the somatic and visceral effectors (just as there is a connection between stomach contractions and feeding activities in normal animals). Exercise seems able only to vary this visceral sensory factor and so affect the intensity of the appetite. Whether or not this is actually the case, I do not know. (A diagram indicating the coexistence of the two types of sensory avenues is presented on page 253 of my paper above cited.)

What Whitman's observations show is that prior to the appearance of that typical form of response known as sex behavior the associations established within the lifetime of the pigeon have changed the stimuli which will later help in eliciting the response by

varying the synaptic connections on the somatic sensory side of the arc. The contrast between mating with members of the same species in the one case and with members of another species in the other case gives the essential fact. In neither instance need the stimulus be connected with the response through synapses set by heredity in order that the modification of instinctive behavior conform to the principle stated. If experiment should show that there is no somatic afferent connection set by heredity to arouse the mating response, the stimulus-response fact would of course be different from what I am inclined to assume, *viz.*, that along with the inherited motor grouping goes a more or less definite nervous organization favoring certain somatic stimuli. But such results, if secured, would only further confirm the fact that associations formed prior to the appearance of the instinct may modify it (either on the motor or on the sensory side) when it does appear. In the food-getting instinct in chicks one has an instinct similar to the sex instinct in that the sensory components of each include both somatic and visceral factors and in that the somatic stimuli are less definite than they later become. The chick pecks at first in response to visual stimulation from any small object or in response to an overpowering appetite in the absence of the proper external stimulus. With practice the somatic stimuli become confined largely to food objects. The significant difference between the food-getting and the mate-getting responses is that one appears shortly after birth and the other much later. The food-getting instinct therefore offers little opportunity for modification by experience either on the sensory or on the motor side prior to its appearance.

I do not regard it as the function of this paper to discuss the question of whether or not instincts do exist. The psychologists who are questioning the existence of inherited forms of response may do the science a service in forcing a more definite use of terms, but so far the prospects of attaining their avowed goal do not seem encouraging. To disprove the existence of instincts, one must either disprove the existence of reflexes or prove that there is a significant difference in kind between the behavior termed instinct and that termed reflex. Mr. Kuo discounts the idea of the existence of instincts partly because the behavior in question involves the coördination of simpler responses, and coördination he holds to be the result of habit. However, physiological work indicates that even the simplest reflexes are coördinated activities. The author also disputes the existence of delayed instincts, inherited forms of behavior appearing at varying intervals after birth. Various angles of this question have been long discussed, but I cite in opposition to Mr. Kuo's view only Lloyd Morgan's somewhat theoretical dis-

cussion of the moorhen's first dive and Yerkes's and Bloomfield's experimental observations on the behavior of kittens in killing mice. In order to disprove the existence of delayed instincts, it is not sufficient to indicate that elements of the response have been exercised before. It is necessary to account for the somewhat sudden grouping of the elements into a significantly new response under conditions where the influence of habit formation is experimentally controlled and negligible.

The opponents of instinct will also have a very considerable difficulty in handling such data, meager though it is, as that presented by Yerkes on the inheritance of savageness and wildness in rats and by Whitman on the hybridization of pigeon behavior.

There are other interesting—but I think seriously mistaken—points both in Mr. Kuo's paper and in other recent papers couched in a similar vein. My purpose, however, is merely to remove the misapprehension which has come to my notice with reference to an earlier proposition, *viz.*, that associations formed prior to the appearance of an instinct may modify the instinct when it appears.

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BOOK REVIEWS

Mysticism, Freudianism and Scientific Psychology. KNIGHT DUNLAP. St. Louis: C. V. Mosby Company, 1920. Pp. 173.

There are two main points of interest in this stimulating essay: the pigeonholing of the Freudians with the mystics; and the reflex arc concept applied to perception and to the association of ideas.

Mysticism is illustrated by quotations from Plotinus and Dionysius, as well as from Maeterlinck and other modern mystics. It pretends to reach a "third kind of knowledge," additional to that gained through the senses and through inference.

This third and highest type of knowledge is to be had only in rare moments of absorption in an adored object, and is ineffable and incommunicable. The author concludes that this "knowledge" amounts to emotion, pure and simple, with the sex element strong in the emotional complex. But such emotional experience has no claims to scientific recognition as a source of knowledge.

"Pseudo-mysticism," exemplified by belief in spirit communication and telepathy, differs from the genuine article in pretending to employ logical inference in reaching its conclusions, but its logic is constantly vitiated by the use of ambiguous middle terms,

or "sliding terms," to use the author's expressive words. All mysticism is impatient of clearly defined terms, and of the whole painstaking procedure of science, and tries to solve the mysteries of life by uncritical short cuts.

Scientific procedure is strenuous and exacting. It requires constant touch with facts, parsimony in hypotheses, experimental testing of hypotheses, verification of results by independent observers, and careful definition of terms.

Freud is shelved with the mystics by the eanny bookseller; Freud's popular appeal is to the love for the mystical. He and his followers shrink from the arduous road of science, and pretend to possess knowledge gained in some other way. His reasonings are vitiated by sliding terms. "Libido" is one such term; it means either the genuine sex motive, or something, oh! very much broader, just according to the momentary needs of the argument.

But the champion sliding term is *the Unconscious*. Sometimes the unconscious is simply a working hypothesis which proves to work well; and sometimes it is a fact from which there is no escape. Sometimes it is merely a "negative concept which can neither be described nor defined"; and sometimes "we are already familiar with a whole series of positive distinguishing features which differentiate the unconscious psychic material from the rest, the conscious and foreconscious." The unconscious is not merely physiological—far from that! It is a kind of unconscious consciousness, possessing the characteristics of consciousness when you need them for the purposes of your argument, but not when they would disturb the argument.

The Freudian confusion regarding the unconscious is in part chargeable against the long-standing ambiguity of the term, "consciousness," which has meant sometimes "awareness," and sometimes "objects of which one is directly aware."

From this grand ambiguity trouble has arisen continually. The strife between "interactionism" and "parallelism": the conception of thought and consciousness as stuff and things, and conversely, the conception of perceived objects as figments of "mind": are only details of the results, of this confusion. . . . We eliminate at the start the metaphysical theories of epistemological dualism which have played so pernicious a role in the history of the Anglo-German psychology. Experience does not give us directly two worlds of objects physical and mental . . . but merely a world of *objects of which we are aware* (pp. 117, 120, 121).

Though the author does not speak of this conclusion of his as having any history, it seems rather reminiscent of things that have been said by Wundt, James, and other representatives of the objectionable "Anglo-German psychology."

The ambiguity of the term "consciousness" is undoubtedly a factor con-

tributing to the Freudian confusion over the "unconscious." . . . But this verbal confusion although a great help to the theory of "unconscious mind" is not its vital source. . . . The believer in "unconscious mental processes" . . . might state his claim as follows: In addition to mental processes, *i.e.*, organic processes involving consciousness (awareness), there are other processes, which while they do not involve awareness, involve something which is more than mere physiological process: something resembling consciousness, but not conscious. This "unconscious mental" factor is therefore an *x*, an unknown, and can not be pointed out in any definite experience. Such an hypothesis might be made. One might also hypothesize a *y* factor, a *z* factor, and an infinity of other factors, all equally unknown, equally beyond experience" (pp. 125, 126).

Since, then, the hypothesis of an unconscious which is not purely physiological is "removed from any possibility of verification," it is entirely valueless to science. What its value or appeal may be to those who eagerly embrace it the author does not stop to inquire, but the answer is suggested in a highly critical review of this same book by the psychiatrist, John T. MacCurdy, M.D.¹ Dr. MacCurdy bases an argument for the unconscious, as against "physiology," on a law of creative synthesis, which can be seen in operation throughout the realm of natural science. Any synthetic combination shows properties that could not be predicted from the known properties of the synthesized elements—as, for example, the crystalline properties of common salt could not be inferred from the known properties of sodium and chlorine. Analytical chemistry tells you of the elements composing the compound, but, to know the compound itself, you must study it for itself, and not in terms of its elements. In the same way, biological processes may be analyzed into physical and chemical processes, but if for that reason we neglected to study life processes as such, we should never know much biology. In just the same way, mental processes are composed of physiological processes; but if we are satisfied to study them only from the physiological side, we shall never know much psychology. Psychology, the contention is, must stick to its own order of facts, and to its own concepts, and not take refuge in physiological interpretations. Therefore, it has need for the concept of unconscious mental processes. The value of the "unconscious," accordingly, is simply that it enables one to keep on using psychological terms, even when dealing with unconscious processes.

I shall not undertake any criticism of this interesting contention, except to remark that it serves better as a justification for the "co-conscious," in Morton Prince's sense, than for Freud's particular brand of unconscious. In double personality there is some evidence of a secondary synthesis of processes lying outside

¹ In an article entitled, "Psychiatry and Scientific Psychology," in *Mental Hygiene* for April, 1921, Vol. 5, pp. 239-265.

the main consciousness, and thus some reason for speaking of co-conscious mental processes; but in the case of dreams, lapses, queer impulses and fears, and unanalyzed motives, I do not know that anyone has seriously attempted to demonstrate the existence of any synthesis additional to that which occurs in the conscious process itself. The conscious process may show disturbance from some source outside itself; but, unless it could be shown that this outside source consisted of processes integrated into a total process of the mental order, we should, even according to Dr. MacCurdy's principle, regard it as physiological.

As against the unconscious in the sense of a storehouse of memories, Professor Dunlap puts the case with striking clearness:

An idea is not a thing like a written document which, after being in the active files is taken out and stored in the transfer case. It is more like an *act* such as snapping the fingers or striking a blow. I may snap my fingers ten times in succession: but no one supposes that the snaps have an individual existence afterwards and are somewhere stored away as snaps which are no longer snapping. No more does scientific psychology conceive of "ideas" as something which can be stored away after they are through "ideating." In the one case as in the other, there is a physiological basis which is modified by the act in such a way that the act can be repeated at a future time (pp. 105-106).

Professor Dunlap, as the reviewer happens to know, has had his eye on the psychoanalysts for many years, and his remarks regarding them are by no means purely "academic." Some of these remarks deserve quotation.

Reactions which later become a part of the general sex activity are found in the child, and therefore pointed out as evidence of sex activity. It is as if one should claim that the labored breathing produced by running to catch a street car is *sexual* because the same labored breathing may occur during certain stages of sex activity (p. 60).

As is readily seen, anything that can be dreamed of has a ready sex interpretation. So that the telling of one's dreams to anyone versed in the gentle art of psychoanalysis is a matter in which your feelings of delicacy or prudence will dictate if you realize the possibilities (p. 71).

This . . . characteristic is true in my opinion of all the cases in which the Freudian analysis "strikes oil." The situation which is discovered through analysis is one which is perfectly well known to the patient, but the patient is loath to confess it and does not realize its importance (pp. 79-80).

The psychoanalyst like the philosophical mystic is essentially tender-minded, and can not endure the difficulties and disappointments of prosaic science. We are not surprised, therefore, to find over and above the essential logical fallacy on which the system is based, a characteristic naïveté in reasoning and a characteristic lack of orientation in facts (p. 93).

It is probable that psychoanalysts do produce cures, or at least marked alleviation of the condition, of certain cases. In other cases the results are less desirable. The question of vital importance is whether the harm done by the general application of the method outweighs the good accomplished (p. 102).

Sometimes, a complex is built up by prolonged psychoanalysis. The patient,

for example, is convinced that his neurosis is a result of the mother-complex; at first he is astonished at the psychoanalyst's discovery but by the copious use of symbolism, by the perversion of all the patient says and does, with that end in view, he is finally persuaded that the complex originated in him, and not in the psychoanalyst. By constant contemplation of the complex and its magic relationships, all the symptoms of the patient's troubles become closely associated with it. If now the psychoanalyst can exorcise the demon he has raised the patient may be cured. . . . In many cases, however, the demon refuses to be exorcised or if he complacently leaves, returns shortly with "seven worse than himself," and the latter state of the patient is worse than the first (pp. 102-103).

Psychology has been culpably negligent in regard to the study of the desires, and the one positive service which the Freudians have done is in emphasizing the incompetence of our information (and also of their own information) on this important subject (p. 159).

The psychologist who needs a little excitement should not fail to read Dunlap's book, and follow it with some of the reviews of it by psychoanalysts. Even MacCurdy, whose long review contains much serious criticism, starts off by attempting to obscure the issue with a dust-cloud of professional jealousies. He speaks of an "antagonism at present existing between psychiatrists and what we may term 'academic psychologists'" "Both the psychiatrists and the psychologists insist that they are the ones who should direct the study and treatment of those mental abnormalities which lead to social unrest, economic insufficiency, and crime, as well as to frank nervous and mental disease." And this in face of Dunlap's statement: "The development of a sound psychotherapeutics will certainly not be the work of the general psychologist. But when it is developed, it will be developed by psychopathologists of thorough training in general psychology" (p. 165). Later on in his review, referring to Dunlap's strictures on the practise of psychoanalysis, MacCurdy exclaims: "How can a college professor, presumably attending to his teaching and laboratory work, who has never had a medical education and has never seen a patient except with a layman's eyes—how can he have collected material justifying such sweeping conclusions?"

Observe, however, the reaction of an anonymous psychoanalyst in the *Journal of Nervous and Mental Diseases*:

The work in question is just such as one would expect of a blind rat caught in a maze—defeat, failure, going here and going there, misunderstanding, misquoting, misreading, a tissue of stupid distortions, clumsy misrepresentations, and silly evasions based upon a host of phobic prejudices. . . . The book, to us, is a ludicrous defense reaction. Psychoanalysis he particularly singles out as a special obstacle to science. Piffle! Nothing can obstruct science when it seeks to learn about reality, not even Dunlap's hobgoblin antics. The psychoanalytic hypotheses are rather object lessons to make-believe scientists who entrenched behind their academic chairs are screeching aloud their condemnation of many things they not only do not understand, but of the very essence of which they seem fundamentally

incapable ever of understanding by reason of their emotional limitations. . . . One would like further to characterize this unutterably stupid production, but already too much space has been wasted in noticing it at all.

Certainly Dunlap has produced a very stimulating essay!

His second main discussion, on the "Reaction Arc Hypothesis," is more apt to arouse the psychologist. The reaction arc concept is the old reflex arc concept, "transformed by scientific psychology" some time within the decade, 1910-1920. Apparently the transformation in question has been the author's own achievement, and has consisted in bringing perception and the association of ideas into line under the general conception of *complete sensorimotor reactions*.

The reaction arc hypothesis is opposed to the old "phrenological" conception of consciousness as "dependent on the specialized functions of certain groups of neurons set apart from the other sorts of neurons" (p. 132). The function of any one neuron is the same as that of any other neuron, *viz.*, "to be irritated or stimulated, and to irritate in turn another cell" (p. 130). "Mechanically, the function of the nervous system is the production of *responses*: that is, the action of effectors in certain ways, consequent upon specific action of receptors. . . . Certain definite responses, or *reactions* of the organism, are accompanied by, or involve, consciousness. . . . From these facts, the construction of the reaction-arc hypothesis is inevitable. Consciousness (awareness) is the result of, or the accompaniment of, or a part of (the phrasing is for the present immaterial)² certain reactions involving the activity of a complete arc from receptors to effectors" (pp. 133-134).

Seeing an object, for example, is a sensorimotor reaction, and requires the activity of a "complete arc."

In the case of vision, experiments on animals, and human clinical cases, make this point clear. Destroying the retina; cutting the optic nerves; cutting the optic tract behind the brain-stem; destroying the occipital lobes (of the cerebral hemispheres) to which the optic tracts lead; or cutting the connections between the occipital lobes and the rest of the cerebral hemispheres; produce the one and the same results—blindness—by interrupting the arcs from the visual receptors to the effector systems, and destroying the possibility of a visual reaction. There is no single system of efferent channels from the hemispheres which the visual reaction need follow: hence, to block completely the visual reactions by operation on the efferent side of the arc, all the efferent channels from the hemispheres would have to be cut. This would cut off the possibility of not only visual, but all reactions—and the patient would not survive (p. 135).

This last is certainly unfortunate, as it means that the "reaction arc hypothesis" can never be verified. We must, it would

² The reviewer would prefer to say, "an attribute of."

seem, relegate this hypothesis to the limbo of hypotheses "which are by their nature removed from any possibility of verification," and which are consequently valueless. We shall never know whether a person could see, with all the motor channels from his brain blocked off; and, since we can not know, why should we care?

Still, though the reaction are hypothesis can never be positively verified, it might perhaps be *disproved* by some less drastic experiment. Some deduction from the hypothesis might conflict with facts. The author helps us on our way, for he deduces various consequences of his general hypothesis, and insists, moreover, that in thus applying it to various problems he does not need to introduce any accessory hypotheses.

He applies the hypothesis to the case of the conditioned reflex. Here we have two stimuli, originally giving two different reactions, but, through simultaneous activity, the two arcs "become connected in the cerebrum so that the current flowing in over the afferent part of the one, may now flow out over the efferent part of the other" (p. 143). Such interconnection of reaction arcs in the cerebrum explains "all habit formation, including both the development of perception, and the association of ideas" (pp. 143-144).

In the development of perception, the child may see and smell an orange simultaneously, and the arcs for the visual reaction and for the olfactory reaction, becoming connected in the cerebrum, enable the child later to make the olfactory response to the visual stimulus.

When he comes to the association of "ideas," the author makes use of the well-known scheme for the chaining together of a series of movements into a skilled performance, such as dancing. The reaction *A*, terminating in the contraction of certain muscles, excites the muscle spindles in those muscles, and thus initiates a second, proprioceptive reaction. Along with this proprioceptive reaction, there is simultaneously excited by an external stimulus the movement *B*; and the afferent part of the proprioceptive arc becomes connected in the cerebrum with the efferent part of the reaction *B*, quite after the pattern of the conditioned reflex. In this way, through the mediation of the proprioceptive arc, movement *B* becomes attached to movement *A*, and no longer requires its own original stimulus.

Now, since an "idea" is to be conceived as a sensorimotor reaction, it must give rise to a proprioceptive reaction in the way just explained, and this proprioceptive reaction (or the afferent half of it, extending from the muscle spindles to the brain), must be the intermediary between one idea and the next in an associated chain.

If ideas are dependent on reactions, and if ideas are capable of association, it must be that the ideational reaction-arcs are of such a nature that the completion of one reaction may initiate another. Since reaction arcs terminate in muscles and in glands, it must be that in one of these tissues lie the necessary receptors of the thought-arcs. The receptors in glands are as yet conjectural, and the glandular response is not of such a nature that we could assume it to be the stimulus of reactions as prompt, as manifold, and as finely graded as thought-reactions apparently are. The striped muscles, however, are provided with a plentitude of receptors in the "muscle spindles," and the muscular responses are quick, finely graded, and of great complexity, competent to initiate reactions of an endless variety. The muscle-receptors are, therefore, in all probability, the beginnings of the thought-arcs (p. 147).

Here we have a very specific deduction from the general reaction arc hypothesis, and it appears that this deduction can be put to the test of facts. Since the muscle-spindle intermediary between two ideas is necessarily "finely graded, and of great complexity," and also highly specific, in order to give the specific sequence of "ideas," it certainly should follow that the amputation of an arm or a leg would break up many definite associations. Loss of the muscle sense, as in tabes, should break up associations of ideas, as it is known to interfere with skilled sequences of movement. Dr. MacCurdy, in the review already mentioned, brings forward still more striking evidence:

If thought originates in muscle perceptions—and he evidently means this literally—then destruction of the muscles must abolish ideas. There are many nervous and muscular diseases in which muscle tissue disappears almost entirely. In these thinking is usually undisturbed. It is possible for an individual to live with his spinal cord divided in the neck so that there is no connection between the brain and any voluntary muscle except those of the head and neck and the diaphragm. Thinking is still possible and may be acute. In case it were urged that thoughts were initiated by the vocal, mouth and neck muscles, it is easy to point to diseases where these are atrophied or have their nerve supply cut off from the brain (p. 255).

This appears like a complete disproof of the reaction arc hypothesis as applied to the association of ideas. The only line of defense which our author has prepared against such an attack is briefly indicated in the following passage:

The reactions are ultimately abbreviated or short-circuited. . . . The complete muscular reaction is necessary during the learning process, but is largely eliminated, in the interests of economy, after the series have been thoroughly mechanized (p. 153).

But against the adequacy of this defense it may be urged: (1) that, according to the hypothesis, at least some imperfectly mechanized associations must be lost by the amputation of a limb; (2) that amputation, *etc.*, should be a very serious handicap in the formation of new associations; and (3) that in admitting that,

after mechanization, a thought can function otherwise than as a complete arc, the author has notably receded from the boldness of his first position. At first he held that "ideas are dependent on reactions," *i.e.*, on complete sensorimotor reactions—since, according to the reaction arc hypothesis, all mental processes are so dependent. But now we learn that the complete reaction is largely eliminated, and still the ideational processes occur. Apparently, some deductions from his general hypothesis have seemed unacceptable to the author, and he has therefore introduced a qualification which amounts to abandoning the hypothesis in its original clean-cut form.

As a matter of fact, he did not succeed in holding fast to the hypothesis even while applying it to the conditioned reflex and to perception. He dealt not in complete arcs as his units, but in half-arcs. The afferent half of one arc became connected in the cerebrum with the efferent half of another arc. In the same way, though he began his interpretation of the association of ideas with the presupposition that he must deal in complete arcs, he had immediately to split up his proprioceptive arc, and let the afferent half of it function alone in mediating between one idea and another. Any theory which dealt consistently with complete arcs would have to seek the formation of new linkages *in the periphery!*

It is impossible to write a physiological psychology in terms of the "complete arc" as unit. Learning, whether motor, perceptive, or "ideational," requires a smaller unit. Facilitation and inhibition require a smaller unit. In the simplest cases of learning, such as the conditioned reflex, the half arc seems to make a workable unit. In reactions that involve a series of cerebral steps between the sensory stimulus and the motor response (as in the case of seeing a signal, knowing what it signifies, and responding with an appropriate skilled movement), the unit is smaller than a half arc, and amounts to a single one of the cerebral steps. In our author's fundamental statement, "that the function of any one neuron is the same as that of any other neuron, *viz.*, to be irritated or stimulated, and to irritate in turn another cell," there is certainly nothing that demands the "complete arc" as the unit. Rather, the unit should be the stimulation of one neuron by another. This is the single step in any psychoneural process; and there is no reason compelling us to adopt any larger unit as the ultimate unit of physiological psychology.

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JOURNALS AND NEW BOOKS

THE BRITISH JOURNAL OF PSYCHOLOGY. June 1921.

The Instinctive Behavior and Enjoyment: C. LLOYD MORGAN (pp. 1-30).—"If I were asked: 'What are you driving at in this and so much else that you have written on instinct?' the reply would be: 'My aim has been to find its place, as defined, in the evolutionary story of life and of consciousness.'" The manner in which the mind acts as a directive agency in determining the course of instinctive behavior and the way in which the mind acts as an impulsive agency, as the driving power behind the observed behavior must both be included; otherwise one has only a description in terms of observed facts which are merely generalizations that formulate the plan of the facts. *Is a Fatigue Test Possible?* B. MUSCIO (pp. 31-46).—An essential pre-condition of experimentation designed to obtain a fatigue test is the knowledge that different degrees of fatigue are present at certain times. It is justifiable to experiment with the object of finding a rapid and convenient fatigue test. It is recommended that the term *fatigue* be absolutely banished from precise scientific discussion, and that the problem to be investigated be defined as the determination of the effects of different kinds and amounts of work (activity) upon mental and physiological functions: that is, that the kind and amount of work be correlated *directly* with changes in psycho-physiological functions, and *not* (as at present) *indirectly* by means of *fatigue*. *A Preliminary Study of the Reproduction of Hand Movements*: C. RODRIGO LAVIN (pp. 47-52).—The problem was to determine the most favorable conditions for the learning and reproduction of hand movements. The conclusions indicate that (1) in the early stages of practice all of the subjects attended to the *form* of a movement rather than to its *extent*; (2) the points of movement most speedily and accurately learned were the beginning and end, and wherever sharp changes of direction occurred; (3) different forms of hand movement were very readily coalesced or "condensed."

Suggestibility with and without Prestige in Children: F. AVELING and H. L. HARGREAVES (pp. 53-75).—The results show that general suggestibility is greatly modified by the specific conditions and elements of the whole situation, which vary in individual cases, according to experience of it and knowledge of it. There is no ascertained tendency for suggestibility to go with other "general" factors such as general intelligence, perseveration, oscillation, or motor dexterity. There is small correlation between it and common sense regarded as consisting largely of affective and conative elements; but none if common sense is considered as a purely cognitive quality. *Recent Work in Experimental Aesthetics*: EDWARD BULLOUGH (pp. 76-99).—

No work of an experimental kind has, to the writer's knowledge, been carried out since 1914, and what is meant by "recent" are experiments undertaken between 1900 and 1914. It is the lack of experimental work during the last six years which prompted the writer to survey the earlier results. The writer emphasizes that until the conceptions with which philosophies of art are wont to operate are illuminated by actually and accurately observed experiences of many persons, instead of being vaguely apprehended and rashly generalized personal introspections of their authors, little will be done by interminable discussions of such topics. *Critical Notice*: G. UDNY YULE (pp. 100-107). A review of the revised and expanded edition of *The Essentials of Mental Measurement* by William Brown and Godfrey H. Thomson. *Publications Recently Received. British Psychological Society Membership List*.

- Brierly, Susan S. *An Introduction to Psychology*. London: Methuen & Co. 1921. Pp. 152. 5 s.
- Dopter, M. *Les Maladies Infectieuses pendant la Guerre (Étude épidémiologique)*. Paris: Félix Alcan. 1921. Pp. 308. 9 fr.
- Mandonnet, P. and Destrez, J. *Bibliographie Thomiste*. Le Saulchoir, Kain, Belgium. 1921. Pp. xxi + 116. 10 fr.
- Moore, Jared Sparks. *The Foundations of Psychology*. Princeton University Press. 1921. Pp. 239. \$3.
- Myers, Caroline E. and Garry C. *Measuring Minds: An Examiner's Manual to Accompany the Myers Mental Measure*. New York and Chicago: Newson & Co. 1921. Pp. 55.
- Sellers, Roy Wood. *Evolutionary Naturalism*. Chicago and London: The Open Court Publishing Co. 1922. Pp. xii + 343. \$2.50.
- Smallwood, William Martin. *Man—the Animal*. New York: The Macmillan Co. 1922. Pp. xiv + 223. \$2.50.
- de Unamuno, Miguel. *The Tragic Sense of Life in Men and in Peoples*. Translated by J. E. Crawford Fritch. (With an Introductory Essay by Salvador de Madariaga.) London: Macmillan & Co. 1921. Pp. xxxv + 332. 17 s.

NOTES AND NEWS

A copy of the second edition of *Moral Values and the Idea of God*, by W. R. Sorley has recently reached us. These Gifford Lectures of 1914 and 1915 were originally published in 1920, and were reviewed in our issue of November 18, 1920. The author prefixes this second

edition with the following brief preface: "In preparing this edition I have kept in view the criticisms of the book which have come into my hands, but I have not introduced new matters of controversy. The few errors which have been pointed out by others or discovered by myself have been corrected silently; and certain portions of the argument, where experience has shown that there was a possibility of misunderstanding, have been made clearer and more pointed in statement. The only addition which needs to be recorded is a short discussion on the relation of foreknowledge to freedom, a topic dealt with too dogmatically in the first edition."

The Southwestern Philosophical Association held its second annual meeting on December 28, 1921, as the guest of Occidental College. Dr. Bernard C. Ewer, of Pomona College, presented a paper on "A Dilemma in Ethics," and Dr. James Main Dixon, of the University of Southern California, one on "The Philosophy of Sympathy" as an expression of French and Scottish thinking. A discussion of Rivers's treatment of instinct and of the unconscious was offered by Dr. John Scott, of the University College of Cardiff, Wales, and this year Mills professor at the University of California. The following officers were elected for the coming year: *President*, Ralph Tyler Flewelling, University of Southern California; *Secretary-Treasurer*, Henry Nelson Wieman, Occidental College; *Member of the Executive Committee*, Bernard Capen Ewer, Pomona College. The next meeting of the Association will be at Easter time.

The Philosophy Section of the Oklahoma Educational Association met on Thursday, February 9, in Oklahoma City. Dr. Melvin Rigg of Oklahoma City College presented a paper on the History of the Logos Doctrine, which discussed St. John's conception of Christ as the Word of God, together with the antecedents of the Logos doctrine in Greek philosophy, and Hebrew theology.

The JOURNAL OF PHILOSOPHY has been unable for some time to fill orders for complete files because of the lack of two early numbers, Vol. II, No. 5, and Vol. III, No. 1 (March 2, 1905 and January 4, 1906). If any of our readers have copies of one or both of these issues which they would be willing to part with, the JOURNAL would be very glad to buy them at the rate of 50 cents a copy.

THE JOURNAL OF PHILOSOPHY

A SUGGESTION REGARDING ESTHETICS

IN the past esthetics has been approached from three different angles—the critical, the philosophical, and the psychological. On the whole these three methods of approach are fairly distinct, and generally a book on esthetic subjects can be unhesitatingly placed in one of these three classes to the exclusion of the other two.

Examples of the critical method of approach are in literature such books as those by Matthew Arnold, Moulton, Brander Mathews; in painting those by Van Dyke, Berenson, Harold Speed; in music those by Dickenson, Prout, and the like. The approach is personal. These men look at a work of art in the same way that a newspaper critic does; indeed, many of these men were newspaper critics at one time in their lives, and have come to differ from the general run of critics only by the superiority of their judgment and power of expression. They are looked upon as experts like wine tasters. The public wants their opinion on art, and they give it to the best of their ability. From the point of view of the public it is a matter of faith and authority; from the point of view of the critic a matter of long experience crystallized into a sort of intuition.

It is entirely a personal matter. That does not mean that it is a capricious matter, a question of mere opinion. The opinion of a trained critic is never a mere opinion. It is the outcome of long experience. What I mean by saying it is a personal matter is that it is wholly a relation between a single critic and an inquiring public. His judgment is what is wanted, and the basis of his judgment is a secondary matter. His intuitive reaction is sought, not the rational and scientific background for the reaction. Often when a critic is asked why he holds an opinion, he finds it very hard to explain. And that is no paradox, for a golfer can hit a ball squarely and yet find it impossible to explain how he did it. It is because a critic often does not know the reasons for his judgment that he falls to ridiculing a work of art, concealing his embarrassment with laughter. The smaller the critic the truer this is, for a great critic is willing to stake his reputation on his judgment whether he can give reasons or not.

Even if a critic does give reasons they are likely to be in the nature of aphorisms, half truths half recognized as such, just one remove from an immediate intuitive judgment. And in general the more universal and sweeping the judgments a critic makes, the less valuable; just the opposite from science where the more universal the law the more valuable. The critical method of approach is not scientific, not disinterested, and dispassionate, accepting the authority and experience of nobody but only the logic of the facts; but on the contrary is wholly a matter of personal experience and authority. It is, therefore, not a suitable method for a science of esthetics.

Now, by saying that the critical method is not scientific, and therefore that it is not applicable to esthetics, I am by no means saying that it is a useless approach. On the contrary, if we should ever have an established science of esthetics with a vast classification of facts and verified laws, we should still want critics to be doing then just what we are doing now. For a critic is to esthetics a good deal what a doctor is to physiology. There is nothing a doctor knows that is not to be found in physiology, yet doctors have not outlived their usefulness. We still call upon them to diagnose our ailments, and consider them much better for that purpose than physiologists. And so in the future, if the future has in store for us a science of esthetics, we shall appeal not to an esthetician but to a critic for a judgment about any new school of art. And presumably the critic of this future will have studied esthetics as the modern doctor studies physiology, and will be as much superior to the modern critic as the surgeon of the present is to the barber of the middle ages.

The second method of approach was philosophical. Examples of this method are the esthetic writings of Kant, Hegel, Croce, Bosanquet, and the like. The assumption behind this method is that esthetics is a branch of philosophy inseparable from it, and therefore to be treated philosophically. The first thing to do is by a process of analysis to define beauty, and then we may draw the consequences. The logic of this approach is quite convincing; for, it is argued, how can we know that anything is beautiful until we first know what beauty is? It would appear that our first effort should be to define beauty.

But in spite of the plausibility of this argument there seems to be a quantity of evidence from external sources to show that we can learn a great deal about a subject without waiting for a definition of it, indeed that perhaps the definition has to wait until we have learned this great deal about the subject. We have a very respectable science of biology though we are still uncertain

about the definition of life, and a very respectable science of chemistry though we are still uncertain about the definition of matter. Furthermore, we now feel well assured that our definitions of life and matter never could have amounted to much prior to our sciences of biology and chemistry which we developed without finished definitions. Of course, we had crude definitions to keep us from going completely astray, definitions that we were willing to change from time to time as the facts seemed to indicate, but both of these sciences have been developed without that finished definition which philosophically seemed to be the first prerequisite of science. Even mathematics does not follow the philosophical method. The definitions of number and quantity have undergone various changes as one discovery or another would suggest, and only recently have been redefined. Even mathematics, the so-called deductive science, developed without a perfect definition of its subject matter. That finished definition, judging from the testimony of the sciences, is the last thing to be determined in the development of knowledge rather than the first.

The science of esthetics, therefore, does not have to wait until philosophy can give it a finished definition of its subject before it can proceed to accumulate data. All it needs is some working definition. A father does not keep his son at home until he can send him into the world with a complete fortune; he gives his son some pocket money and sends him into the world to make his fortune. And now, of course, I do not mean that speculation as to what that ultimate definition will be is valueless. Our curiosity is impatient, and we wish to speculate about the complete nature of things before we have complete knowledge. To see things as a whole as well as possible is the function of philosophy, and that is no little thing. But philosophy can still continue to seek the true definition of beauty while the science of esthetics is plodding in the dust of facts, and may perhaps be willing occasionally to pick up some slight suggestion out of the dust. Philosophic interest in the ultimate nature of life and matter does not seem to have been damped by scientific activity in biology and chemistry.

The third method of approach was psychological. Of this the work of Lipps, Hirn, Fechner, and a swarm of men whose articles appear in psychological periodicals, are typical. The implied argument of all these men is that since the appreciation of beauty is a conscious experience, esthetics is necessarily a branch of psychology and obviously falls under the domain of the emotions. When the psychology of the emotions is developed, it will then be a simple matter to apply the general principles to the experience of esthetic appreciation. Meanwhile, we can carry on a few simple experiments on sensory appreciation, balance, symmetry, *etc.*

I would be far from denying the value of these simple experiments. They have given a great deal of important information, but I believe any candid psychologist would be ready to admit that the whole sum of information so gained or that ever will be so gained would leave one only on the doorstep of esthetics. Suppose we knew all that psychological experiment could tell us about balance, symmetry, and linear combination, it would still be a long distance from all these facts to the Amiens Cathedral. The rest of it, the psychologist would say, lay in the psychology of the emotions and the higher processes. Granted, and so esthetics must wait until the psychology of the emotions is complete. Thus psychology would tie esthetics to her apron strings with the same convincing logic that philosophy would tie it to hers.

But how escape from psychology, it may be asked. Well, how did psychology escape from philosophy? There is no greater fallacy than the belief that the foundations of a science must be firm before work can begin on the science itself. The metaphor is misleading, for every material advance in the erection of the superstructure brings about a corresponding advance in the making of the foundations. A better metaphor would be of a tree, which must have roots to stand, but whose roots grow with the growth of the trunk and limbs. With such a metaphor in mind it would be no paradox that a seedling science should require only a seedling's roots, and not the broad and systematic radiation of an ancient and matured science. Esthetics is a seed dropped from the seedpods of psychology, and may sprout at once in independent soil.

Economics is also a seedling from psychology of such rapid growth that it is almost overshadowing the parent tree. For economics takes its departure too from conscious experience. It is the science of a certain limited group of human desires—*viz.*, those that lead to exchange. And the first rootlet that fed the science and held it in its place was the concept of the economic man, which on analysis proves to be an assumption of the nature of human desires. On that assumption the science grew to considerable size. The assumption has since proved false, but it served to nourish the science while it was young.

A similar assumption is what esthetics needs in order to develop into a science. We shall never get such a science if we wait for the intuitive judgments of critics to become organized into a consistent system: we shall never get it if we wait till philosophy gives us a perfect definition of beauty: we shall not get it if we wait for psychology to clear up the field of consciousness. The three traditional ways of approach to esthetics begin splendidly paved but soon dwindle to ribbon roads and presently are lost in underbrush

and tangle. Esthetics must build its own road if it would be developed. And all that it needs for starting that road is a working unit.

Now, a working unit is a form of working hypothesis, and in this case at least it should not be made too exact or confining, or it will destroy its own usefulness. If the staging for a building is made so solid as to resemble the finished structure, it will cut out the light and hinder if not make impossible the erection of the building for which it was to be a means. The working unit for an independent esthetics should be sufficiently open, and free, yes, and ambiguous, to allow as large a number of men to coöperate under it as possible, and as large a number of pertinent facts to be distributed under it as possible. The aim of a working unit is not to bring exact results but to bring big results.

If there are people who think that big results can only be obtained through exactness, these people are much mistaken. This is a fallacy similar to the one mentioned earlier, the belief that a dependent science can only be developed if the fundamental science upon which it depends has been completed. Science does not build itself up from preëstablished exact units, but moves progressively from inexactness to greater, and greater, and greater exactness. Physics is not yet the exact science it will be. Exactness is derived from inexactness. We lose all if we try to make our working unit of esthetics exact at once, for the chances are we shall make it exact in the wrong direction. We must be satisfied to begin with an inexact unit.

Furthermore, in the early stage of a science it is highly advantageous to employ a unit that is easily understood, a more or less common-sense concept. For in the early stages of a science there is no established school to train men to a method and a vocabulary. The men working in the science will be widely scattered and largely out of communication with one another. If a too recondite term is used by one man, it is likely to be passed over by the others who will substitute some favorite term of their own, and presently there will be no one unit but the same chaos we now have. A recondite term is like a word in a dialect: a common-sense term has a universality and a consolidating power which is worth more than all else in a science struggling for life.

A common-sense concept, not too exact, capable of embracing many facts, and of bringing into at least seeming agreement many men—these are the requirements of a working unit in esthetics. Such a unit, I believe, has been groping its way towards recognition in the last few decades. It is the *liking of a thing for itself* in contrast to the valuing of a thing as a means to something else.

It has been variously called "intrinsic," "disinterested," "independent," "primary" value. It simply marks off the attitude opposite to the practical attitude.

Nearly all prominent estheticians of the last century have this concept at the core of their definitions. So with Bosanquet, Croce, Santayana, Fechner, to mention only a few of the greatest. And notice to what different philosophical schools these men belong. These men differ from each other in their attempts to make their definitions exact. They have in common the core of that inexact common-sense concept of things valued for themselves independent of all practical considerations. They feel, however, that this concept is too wide and attempt to narrow it and make it exact. But the moment they attempt to narrow it they are led one this way and one that according to their personal predispositions and metaphysical leanings. The consequence is that they all begin to quarrel among themselves about the trimmings of their definitions instead of getting down to work and accumulating facts under the core of their definitions. If these men would let the trimmings go, they could coöperate and work in harmony. Not that they should totally forget their disagreements, for out of such disagreements would ultimately come the possibility of bringing greater precision into the working definition. But the emphasis should be thrown on their points of agreement rather than on those of disagreement if progress is to be made in an independent science of esthetics. But, of course, none of these men had any such aim in mind. All I wish to point out is that the unit I am proposing here is not one I have arbitrarily made up, but one that already exists at the bottom of most modern esthetic theory. And all that is needed is to bring this crude core out into the light in all its starkness and uncouthness, and in spite of its unprepossessing appearance to accept it.

What we want at present is not a finished definition of beauty, but something to gather facts about from which generalizations may be made and perhaps laws determined, laws which in turn will eventually refine and make precise the uncouth unit to which they owed their discovery. The unit will circumscribe a field of experience which contains our esthetic facts, and that is all we have a right to ask for in the beginning. If there is hope for a concrete science of esthetics in the near future it lies in some such concept as the one we have been considering. It assuredly does not lie in criticism, or philosophy, or psychology.

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ESTHETIC VALUES AND THEIR INTERPRETATION

THE paper of Mr. Pepper on a point in esthetics¹ raises a number of questions that would be interesting to discuss at length. The following remarks are not offered as such a discussion and no more is claimed for them than that they happen to be my opinions at present.

Mr. Pepper puts excellently the contrast between esthetic criticism and scientific formulation. Any critical estimate involves so much of the critic's personal equation, Mr. Pepper thinks, that it tends to be the reverse of scientific; it is not disinterested nor dispassionate. We should be suspicious of sweeping judgments in esthetic criticism. But in science just the opposite is true, "where the more universal the law, the more valuable." The critical method of approach is, therefore, not a suitable method for a science of esthetics.

This is nearly all true, but, I suspect, not for the reasons Mr. Pepper has in mind. I agree that the method of "criticism" is not scientific; I agree, moreover, that it can not possibly be made so, no matter how disinterested and dispassionate the critic might be. But that is not because critical judgments are affected by a personal equation, which, perhaps, they usually are. It is because the judgment of criticism deals with an individual in its uniqueness, while a judgment of the scientific type deals with a universal, *i.e.*, with something intended to be applicable to as many individuals as possible.

I am assuming, I think with Mr. Pepper, that criticism aims to make us well acquainted with particular works, to bring us close to them so that we not only recognize what they may have in common with other works, but perceive also what is not duplicated anywhere, unless it be in perfect copies. I do not claim that all criticism has this function, but for the present I refer to the kind that does have it. And this kind of criticism does seem to care only or chiefly about the individual and to be indifferent to the type. And if the essence of science is to be capable of statement in laws which are not imaginary universals, but which convey a knowledge of certain constant and repeating details of nature, criticism evidently can not be scientific.

We can describe the nature of horses, and the nature of tuberculosis, but what exists are individual horses and individual sick people. This, I suppose, is the natural subject matter of any science of horses or science of medicine. One horse is, to be sure, like another and yet just those respects in which one horse is not like another

¹ "A Suggestion Regarding Esthetics," this JOURNAL.

may be what "makes all the difference." In ethics rules are important, but we say often that a case must be judged on its own merits. A science of ethics, however, must consist of rules or other general statements. Yet, surely, a science of ethics exists, or ought to exist, for the sake of its natural subject matter, just those individual cases that may show all manner of departure from type or complication of type.

The phraseology of universals is no less essential to philosophy than it is to science (admitting, for the moment, a difference). But what is passed over is ignored just because it is not found in all members of the type; and how significant or valuable this may be in concrete human experience can be decided only by some other manner of approach. Any method, then, which aims at propositions intended to be true of indefinitely many individuals must leave unnoticed more or less of the actual content which another method concerned with one thing at a time might pay full attention to. And a science of esthetics, if a science at all, would be like other science in this respect.

Is, then, a science of esthetics impossible? Candidly, I don't know, but I suspect it is; or, perhaps, I would prefer to say that we already have it in the only sense that is worth insisting upon. For the sake of what fruits would a science of esthetics exist? What is its natural subject matter? Again I am not sure that I know, or rather I would say that it may have various fruits and be about a variety of things. That is a verbal matter; and provided the questions studied are not artificial questions, and the discussions not confused by misunderstanding, it is a matter of no great consequence. If, however, the study of esthetics is to lead us to esthetic education, to experience marked by the possession of fine and organized esthetic values, and the constant activity of trained and discriminating senses, its purpose is not to lead us to something scientific in the sense above indicated, but to the unique individual, to something not defined but perceived.

What escapes definition and coherent description in any work of art is precisely what is unique, interesting, and possibly most valuable. A work that has none of this is "academic"; it embodies the rules and nothing else. We might propose as a definition of the academic: That which is made according to a rule—where the rule is more obeyed than used. Of course, a science of esthetics may aim to give us the academic, and perhaps it can not do anything else, unless we consider that it should be a body of information useful in producing esthetically valuable objects. But such objects are, of course, individual, and a great deal of technical, scientific knowledge is required for their production. Consider what an architect

needs to know, or a capable composer. A vast amount of science is necessary that the world may contain what we call works of art. It does not occur to anyone to say that this knowledge constitutes a science of esthetics, but, after all, why should we not say so? It is, at least, the effective knowledge that is indispensable if what we call art is to be systematically created.

And now I come to Mr. Pepper's "suggestion," viz., that the esthetic object as such is one that is liked without reference to any utility and, perhaps, in spite of it. As Mr. Pepper rightly says, the contrast between "intrinsic" value and valuable instrumentality, or to use an old and honest pair of terms, between beauty and use, is one of the commonplaces of the subject. But we have not yet seemed to get anywhere from this point of departure. If the distinction is to bear any fruit, it must be interpreted.

In this conceptual formulation, the beautiful and the useful are very sharply discriminated, and if one is still at the dialectical stage, it may seem that beauty and use must be separated in fact as they are in definition. The experience of so many of us in finding art only in museums is very misleading. Many, at least, of the treasures of the great galleries were produced to be a part, and perhaps a very important part of a church. An altar piece, on the altar where mass is said, may or may not be beautiful, but while in its original position it is preëminently "useful"; subsequently removed to a museum, its utility is lost and its beauty and lack of use characterize what is now classified as a work of art. Surely the problem of our day is how to overcome the separation—how to promote a demand that utilities shall be appropriately esthetic, and how to make esthetic value pervade common things and their use, not artificially and self-consciously, but simply and spontaneously. What knowledge is it that will help us to do this? I can not think it is any science of esthetics as we are inclined to use that word, but also, I repeat, I can not see why we should not call esthetic science all that science that an artist in one field or another must have if his genius is to have tools to work with. The same science may be used for other ends, but what of it?

Thus far, I have spoken as though in esthetics one were always dealing with art. That is as false as anything can be. I suppose a new wire fence is usually a thing of esthetic delight to the farmer who has just set it up. A good cow, a strong horse, a favorite tennis racquet, are likely to be objects of esthetic affection. I hope I may be pardoned for suggesting again ² a translation of the beauty-utility distinction into slightly different terms.

² Cf. Some passages in an article entitled "Value and Causality," this JOURNAL, Vol. 15, No. 4, p. 85.

Utility considers effects to be produced; it, therefore, envisages the future. A type of value that is quite independent of consequences will presumably be an interest in a present; witness the eloquent conclusion of Pater's fine book, *The Renaissance*. The present and the future are both objects of concern, and the future is something to be concerned about, because, sooner or later, it will not be future any longer but present, and life or experience is always in a present. If the present is always *merely* a scaffolding for the future, if it never has any value of its own, life can not be said to have much success. Let the success of the present be all in dreams of the future—that is indeed often the noblest and happiest present—but all the present moments of any man make up all of that man's life. If it were not for time and the future, I do not see how there could be any such thing as consequences or instrumentality in the natural sense. From this point of view, all values of the present are esthetic values whether they pertain to works of art or to anything else, and all values actually attained are attained in a present.

The translation of the beauty and use contrast into the temporal contrast of present and future is not advanced here as of any importance, least of all as of any importance for esthetics; but it may be interesting nevertheless. Of that the reader must judge; he should remember, too, that such contrasts are likely to be discriminations in analysis and not separations in fact. Whether or not the temporal contrast is significant for esthetics, it is fundamental in morals, in life. The puritan moralist despises the lover of beauty because he lives too much in a present. The lover of beauty dislikes the moralist who impoverishes life by postponing the enjoyment of its fruits. To each of these the word "good" has a different meaning. To a certain extent we could translate beauty and use into another contrast, the individual and the group. No such translation should be overworked or regarded as absolute, but with this proviso any such translation, if based upon empirical relations, is likely to clarify more or less.

Why should a distinction that has proved so barren as the distinction of the useful and the valuable useless nevertheless persist? While the distinction as phrased may be too much in terms of a logical antithesis, it may yet represent something that is both real and important. I think Mr. Pepper is right in indicating the distinction as important, not as a dialectical major premise, but as a point of departure, as something to interpret in terms of relevant experience. So much tragedy in life is produced by esthetic appeals to the soul, and so much dignity by other esthetic appeals. Fruits ripen, if you like, in the future but they are enjoyed in the present; and when they belong to what we call the past, it is the present that they

brighten or stain, and the future that they influence. And when we say they influence the future, we mean that they influence a present yet to come. As I have said the temporal contrast may not be very relevant, if terms are used absolutely, but it is a distinction that all empirical moralists and all directors of conduct must, one may suppose, have to make continually.

And now, if I seem to abandon what I have so labored to express, that, perhaps, only illustrates my thesis that life is continuous and one moment plays into another, but that one moment may be distinguished from another. Interpret the distinction of beauty and use in some other way; interpret it in as many ways as possible, since any interpretation is the noticing of some feature or some relation in what is subtle and interesting.

In nature no factor is more important than the factor of time, but of this logic takes hardly any account; and though time is an important term in physics, it is so in a sense very different from that which gives it such a rôle in the literature of human feeling. The arithmetic of life insurance companies brings us closer to what time means to those that live and grow old and to those that write history; to those, too, who have inherited the patrimony our ancestors achieved.

For, in any case, the depth and solidity of the esthetic factor in a person's life depend very much upon what kind of a world he is permitted to live in, depend, that is, greatly upon the degree to which normal and sharable esthetic values have been brought into a heritage for him or her by the past. A world rich in what is dignified, simple and beautiful may not be more "useful" than another in the usual sense of that now somewhat unhappy word, but it is a great deal better. And in the larger sense of the word, and the truer one, it is supremely useful, since it perpetuates itself. To possess this patrimony and to transmit it with the addition of what we have made it yield, not as a dead past but as something that binds one generation to another and makes a single life out of the lives of many men or of many nations, to hold together a community of the spirit, not merely in space but in time, seems to me a large part of what we may reasonably call our esthetic responsibility, something that the study of esthetics ought to encourage and promote.

WENDELL T. BUSH.

IMMEDIATE INFERENCE AND THE DISTRIBUTION
OF TERMS

IN the interpretation of exclusive and exceptive propositions there is a difficulty pertinent to the discussion carried on in this JOURNAL¹ by Professor Toohey and Professor Dotterer as to the distribution of the predicate in the partial inverse of affirmative propositions, and as to "immediate inference" and the distribution of terms in general.

The exceptive proposition offers a privileged example of how, in an actual situation within a limited universe of discourse, the partial inverse of a true proposition may well assert what is not true. *All but S is P*, we are told, is correctly expressed by the *A* proposition, *All non-S is P*; and from this is correctly derived *Some S is-not P*. It is agreed that we have no right to say *No S is P*; and examination of the meaning of *All but S is P* will convince, I believe, that strictly taken it need not express the situation from which alone *Some S is-not P* is justified. When Francis I wrote home "All is lost but honor," he undoubtedly meant that honor was not lost; and in general we should rightly hold the man who used exceptives to suggest what he knew to be untrue as at least not a model of truthfulness. Yet it must be admitted that, if Francis had lost honor as well as all else but preferred not to say so, he would have told, not the whole truth to be sure, yet not strictly an untruth; inasmuch as he had made no assertion about honor but had merely held it apart from the assertion he did make. And in fact, our exceptives frequently arise simply from ignorance which is properly recognized in the limitation of our judgment, or from a courteous, discreet, kindly, timid, or malicious reservation of statement. The conventional "present company excepted" is notoriously untrustworthy in any positive implication. Or let us agree that any triangle must be scalene, isosceles, or equilateral. Then to say "scalene triangles" is to say "all triangles except isosceles and equilateral triangles." And scalene triangles have three sides. Substituting the equivalent term, we may say "All triangles except isosceles and equilateral triangles have three sides"—and, if we had to discover the number of sides of triangles by inspection, we might well, after an examination only of scalene triangles, make this assertion; but it would be none the less false to say that some isosceles or equilateral triangles do not have three sides. In short, the exceptive proposition is a statement which is said to be correctly represented by a proposition from which is correctly derived a proposition which is not necessarily implied

¹ Vol. XVII, pp. 519-522; Vol. XVIII, pp. 320-326.

by the original statement. It appears, then, that either *All non-S is P* does not adequately and simply express the import of *All but S is P*, or the process of inversion is in some cases illicit.

The case of the exclusive proposition is more illuminating; since here the untruth, though of precisely similar nature, may be taken as not the result of inversion, and in any case does not involve the inversion of an affirmative proposition. *None but S is P* is ordinarily represented, for syllogistic purposes, by *All P is S*; and the converse of this is *Some S is P*. If it be said that the exclusive is more properly represented by *No non-S is P*, then *All P is S* is the obverted converse, *Some S is P* the partial inverse. But here it is the partial inverse of an *E* proposition, and there is no infraction of the rules of distribution. The possible falsehood, however, remains as with exceptives; for *Some S is P* is frequently in actual cases not true. Admittedly we have no right to say *All S is P*; and since no assertion is made of *S*, wherein do we get the right to speak even of a part of *S*? Surely "No admittance except on business" ordinarily implies that some of those intent on business are admitted, but since other rules unnamed or other existing circumstances may well exclude all actual persons applying, we can not with strict assurance say that anyone is admitted. And this is not mere abstract quibbling, for the case is often actual because of ignorance, discretion, or the mere inadvisability of including all conditions in one proposition. I may offer a college course which is truly described as elective (none but those who elect it take it), and as open only to seniors (none but seniors take it); and if there is no senior, or no one who desires it, or no senior who desires it, it will be false to say that some who elect it take it or that some seniors take it. It might be quite true that only a mathematical genius can square the circle; it is certainly not true that some mathematical geniuses can square the circle. In short, it appears that either *No non-S is P* is not a perfect expression for *None but S is P*, or there is a loss of truth in obtaining the obverted converse of *E* (here, *All P is S*), or there is a loss in obtaining the converse of *A* (here, *Some S is P*).

In general it appears that by the use of accepted methods of interpretation we may from everyday assertions obtain propositions which are seen to be untrue or possibly untrue when referred to the actual situation from which the original assertion sprang and of which the original assertion is true. The error at times shows as a formal violation of the rule against going from an undistributed to a distributed term; but is broader and apparently not to be solved by a solution of the difficulty about distribution, since it appears where there is no evidence of that difficulty. It may

further be noted that, inasmuch as the error is real, it directly impugns not the rule of distribution but the processes wherein that rule fails.

Now Dr. Keynes, whose doctrine as to the distribution of the predicate in the partial inverse of an *A* proposition Professor Dotterer seeks to amend and Professor Toohey rejects, seems to me at least to point the way to the solution of the problem, though not in his direct treatment of "validity of inversion" in the fourth edition of his *Formal Logic*. His discussion in the third edition seems to me the better, and the real clue to the larger problem is afforded by a footnote at the beginning of the chapter on *Immediate Inference*.² The usually accepted explanation is that of the fourth edition, according to which in inversion of *All S is P* we tacitly assume the premise *Some things are not P*. "The conclusion, *Some not-S is not P*, may accordingly be regarded as based on this premise combined with the explicit premise *All S is P*; and it will be observed that, in the additional premise, *P* is distributed."³ Now the introduction of this assumed premise does seem to provide a proper distribution for *P*; yet, taken strictly, how does it act as premise? It can not be combined with the other premise in any possible syllogistic form to give the required conclusion. And if the mere presence of a distributed term in an assumed proposition gives us the right to distribute that term in the series of transformations of the proposition with which we are working, it gives us decidedly too much; for it would justify any distribution of that term and merely abrogate the rule of distribution altogether. We could go simply from *All S is P* to *All P is S*. Professor Dotterer is quite right in pointing out that the distribution of a term is not an absolute matter, but is relative to some other term or terms. Distribution is a property of terms "in syntax." We can not hunt around for any proposition in which a certain term is distributed, and then proceed blithely to distribute it in some other series of transformations. On the other hand Professor Toohey is quite right in maintaining that to make a term distributed or undistributed relatively to some one other term and to deny any pertinency to this distribution elsewhere is equally to take all value from distribution. Within any series of transformations of a proposition or within any true syllogistic series (propositions connected by competent middle terms), we have the right to speak of distribution or lack of distribution simply; but not as between unconnected propositions. A distributed term, that is, is distributed with regard to the other term in its proposition and to

² Keynes: *Formal Logic*, 4th ed., p. 126, n. 1; 3d ed., p. 93, n. 1.

³ *Ibid.*, 4th ed., pp. 139 ff.

the other terms in other propositions connected therewith by distributed middle terms. An undistributed term is undistributed with regard to the other term in its proposition and to the other terms in other propositions connected therewith by middle terms, distributed or undistributed.

But this is not all. With regard to its own contradictory, and to at least some part of the contradictory of the other term in its proposition if that proposition is universal, any term is always distributed. For by the principle of contradiction the contradictory of any term is excluded from the whole of that term; and, since in all universal propositions at least some portion of the extension of the contradictory of the other term must coincide with some portion of that of the contradictory of the term in question, with regard to at least that portion of the contradictory of the other term the term in question will be distributed. But, of course, this is true only if there are contradictories to these terms. For if there be no contradictory to the term in question, then it will not necessarily be distributed with regard to any portion of the contradictory of the other term. And if there be no contradictory to the other term, it would be meaningless to assert distribution with regard to some portion of it. And this is why the assumption of the existence of the contradictory of the original predicate validates the partial inverse: not that we manufacture any premise therefrom, but that, if that contradictory exist, the term by its very nature will always be distributed with regard to it; and that obviously in the *A* proposition with which we start, if the contradictory of the predicate exist, then the subject must have a contradictory which in some part must coincide with the contradictory of the predicate; and with regard to that part the predicate will always be distributed—as it were by right of eminent domain. Now abstractly a contradictory can be made to any term; but actually, of course, we may have to deal with an all-inclusive genus, either absolutely or as an exhaustive species within some explicitly limited universe of discourse. The case, then, in the matter of the partial inverse is this. The explanation does not lie in any premise, but does lie in the assumption of the existence of the contradictory of the original predicate. For if that contradictory exist, then the predicate, being always distributed with regard to it, must also be distributed with regard to whatever portion of the contradictory of the original subject coincides with it; and somewhere within the same universe these two infinities must at least partially coincide. We have thus the right to say *Some not-S is not P*, since *P* must be distributed with regard to some portion of *not-S*. But actually we may have as predicate an exhaustive species which allows no

existing contradictory, as if we say "All is lost but honor" when really there is nothing not lost. In such a case, going from "All things other than honor are lost" to "Some honor is not lost," we do go from a lack of distribution to distribution, and from truth to falsehood.

Now this is but an instance of the general principle given first by Dr. Keynes in the footnote already referred to. "We proceed on the assumption that each class represented by a simple term exists in the universe of discourse, while at the same time it does not exhaust that universe. This assumption appears always to have been made implicitly in the traditional treatment of logic."

It is that assumption, together with the acceptance of the logically prior principle of contradiction which necessitates the distribution of any term relatively to its contradictory, and together with the nature of the relations expressed in categorical propositions which through the principles of contradiction and excluded middle necessitates the coincidence of at least part of the contradictory of one term with at least part of the contradictory of the other term in all universal propositions, which validates the partial inverse of the universal affirmative proposition. And it is that assumption which is apt to give rise to error when the procedures based thereupon are applied to actual situations not conforming thereto; not only in the partial inverse of *A*, but, as we have seen with exclusive propositions, in the partial inverse of *E*, where the lack of conformity is in the assumption of the existence of the original predicate or of the contradictory of the subject; and, indeed, in other interpretations, even, conceivably, in so direct a one as limited conversion or simple conversion or simple obversion. The formal violation of the rule as to distribution is apparent in one case only, not because of any peculiar invalidity of the inversion of *A* propositions, but simply because for other reasons the partial inverse of *A* is the only case in which an originally undistributed term reappears distributed with regard to the contradictory of the other term; but there are several in which the contradictory of an originally undistributed term is distributed. And whence comes this right? From the fact, of course, that the contradictory of a term is necessarily distributed with regard to that term, and hence, in affirmative propositions, with regard also to at least part of the other term, and, in negative propositions, with regard to at least part of the contradictory of the other term. It is thus (with one exception, the full contrapositive, which will be noticed presently) that in the scheme of education contradictories will be found distributed. In general: Any term is distributed with regard to its contradictory and its contradictory with regard

to it. When the term is put into a proposition, further results follow from this. In all universal propositions, the term will be distributed with regard to at least part of the contradictory of the other term. If the universal be affirmative, the subject will be distributed with regard to the whole of the contradictory of the predicate. In all affirmative propositions, the contradictory of the term will be distributed with regard to at least part of the other term. If the affirmative be universal, the contradictory of the predicate will be distributed with regard to the whole of the subject and will further be distributed with regard to at least part of the contradictory of the subject. (*Cf. the full contrapositive, All not-P is not-S.*) In all negative propositions, the contradictory of the term will be distributed with regard to at least part of the contradictory of the other term. An examination of the table of results of obversion and conversion will substantiate these *a priori* relations. In fact they are tacitly assumed in the principles of obversion and conversion, and, having once accepted these principles, we need not, so long as we correctly apply them, bother about particular distributions. But the whole structure rests upon the assumption that the terms have existence within the same universe of discourse and that neither exhausts that universe.

The really important question, then, is as to the justification for this assumption. This is not the place for a complete discussion of so profoundly reaching a question, but a few suggestions present themselves.

In the first place, it must be admitted that the lack of conformity is real and not negligible. In the fluency of our statements, we make many assertions taken as true relevant to a situation which rejects some formal transformations of those assertions. And it must be admitted that obversion and conversion need some more basic justification than a let-it-be-so. Yet this is not necessarily a condemnation of immediate inference nor an indictment of formal logic. We can not hope always to find a ready conformity between usage and principle. If logic insists on becoming complicated, it is therein not different from other sciences which attempt to conform to the wanton wiles of the actual. Much of the contemporary complaint against logic is really a complaint against the waywardness of language—the complaint that people refuse (for which, on other grounds, we owe thanks) to confine the opulence of expression to the pigeonholes of logicians. The formality of logic is of meaning, not of word; and all interpretation moves under the threat of material fallacy, whose generic nature is equivocation. Logic may well be complete and valid, despite the difficulties which expression makes for diagnosis.

The assumption that subject and predicate belong to the same universe of discourse we may readily allow as just. It flows from the very nature of judgment. It is true, of course, that sometimes, when we come to take contradictories for the purposes of obversion, we fall into error through an unwarranted limitation of one term with respect to the other; but even here the one universe is part of the other, and the error in extension is chargeable to faulty manipulation on our part, not to any defect in judgment. When, above, I used the illustration *All equilateral triangles have three sides; Some non-equilateral triangles have not three sides*, it was doubtless apparent that a more careful contradictory for the subject would have avoided the falsehood; yet the illustration there was proper, for, if both subject and predicate were reduced to the limited universe *triangles*, the falsehood would remain: *All equilateral triangles are three-sided triangles; Some non-equilateral triangles are not three-sided triangles*.

We may also, it seems, admit as just and necessary the assumption that the terms do not either exhaust the universe. This, however, is a necessity not of the essence of the judgment but of the essence of obversion; and, though obversion—negative statement—is too natural and proper a mode of expression to be discarded or seriously impaired by the chance of failure in limiting cases, we must recognize the essential shortcoming of the process. In absolute statements the limiting case is negligible; we do not often deal with completely exhaustive genus. The pinch comes because our actual statements so often have to do with artificial, delimited universes. And here, so long as our assertion is of definite, positive species, there is small danger; for, if one of the terms does exhaust the universe, we are apt to have our eyes open to it, or at any rate the derived statement will hide itself in the decent obscurity of an infinite term. But where our assertion begins with an indefinite negative, trouble arises; for that term reappears as a definite and positive term, and either we know it does not exist or, more usually, we know it does exist and infer from it a like existence for the other term which may not exist. So, from *All not-S is P*, we get the inverse forms *Some S is not P* and *Some S is not-P*; and, knowing the actual existence of the definite *S*, we ascribe equal existence to *not-P*, which, if *P* in the first place exhausted the universe, has no existence at all. This is the source of the peculiar liability of exclusive propositions to false interpretation. Even the contrapositives, which enjoy a somewhat privileged position as it were because of their kinship to the denial of the consequent, are vulnerable here.

If obversion lays itself open to actual error because of the assumption that the terms do not exhaust the universe, conversion runs foul

of the more primary assumption of the existence of the terms. But it may be noted that this assumption involves less than at first appears, and for affirmative propositions at any rate may be pretty well justified. For it does not, of course, necessitate any special sort of existence, certainly not physical existence, for the terms; we can deal validly with propositions concerning chimeras, myths, abstractions; nor, further, does it necessitate even that the terms or either of them be in the original proposition thought in extension at all. All we need assume is that our terms have some meaning, and that whatever sort of existence is implied of one can be truly thought as inhering in the other within the same universe. And for affirmative categorical propositions this seems an easily justifiable assumption. If we accept the commonly accepted view that affirmative categoricals imply the denotative existence of their subjects, then, even though the predicate be thought primarily in pure intension, it must nevertheless be admitted as capable of extension at least so far as the proposition asserts coincidence of that intension with the extension of the subject. And if it be maintained that in any certain proposition both subject and predicate are in pure intension, then no difficulty will arise, since after conversion no different logical being can be asserted of either term than in the original proposition belonged to both. Two troubles, however, are found. In the psychology of understanding propositions, we commonly (and correctly) grasp the subject and then infer of the predicate at least potentially the same sort of existence we know the subject to have. It thus sometimes happens that, beginning with a proposition the subject of which has a limited sort of existence and the predicate of which is an attribute belonging not merely to the subject but to other subjects having much more complete existence, we arrive at a converse according to which we are tempted to extend to the new predicate the full-statured existence belonging to some other part of the extension of the new subject. But inasmuch as the converse of an affirmative is always particular, this error is always simply one of presumption on our part, not of illicit import in the conversion. The other danger arises from the frequency with which we express what are properly hypothetical judgments in categorical form. Here the partiality of the converse will not save us, for the reduction required—the shift in relation as we pass from that of subject to predicate to that of predicate to subject—is not a matter of quantity, from universal to particular, but is a matter of modality, from apodeictic to problematic. So it is with rules, mandatory and diagnostic. From the legend *No admittance except on business* I know that if someone is admitted he must be on business. Now perhaps I put this *All admitted persons are persons on business*;

but if I want to make *persons on business* the subject and tell what I know of them, I ought to say, not *Some business persons are admitted*, which will almost certainly be taken to mean more than I know, but *If someone is a business person, he may or may not be admitted*. For what I really know about the predicate is not that at least some of the class are also of the subject-class, but that at least I can not deny the subject of any member of the predicate class as such. When hypotheticals are put as categoricals, conversion, even by limitation, is an affirmation of the consequent—and inversion adds a denial of the antecedent.

As to negative propositions, the case is by no means so favorable. Even with respect to the reference of the terms to one universe there may be some hesitation. I should maintain, however, that negatives as well as affirmatives presuppose some community of relevance and in more than a barely formal sense. We may, to be sure, assent to the medieval denial of the triangularity of virtue, but any meaning which the proposition may achieve will depend upon the possibility of actual predication in some sense. To deny an attribute is to imply the significance of its possession. Our discussion of that part of the assumption which asserts that neither term exhausts the universe will also hold for negatives as well as affirmatives; though it may be noted that it is chiefly with negatives that actual usage belies the assumption, since our most frequent dealings with exhaustive species is when we deny of some subject an attribute which actually within the limited universe in mind does not exist—whose contradictory, that is, is actually exhaustive. Hence, again, the peculiar vulnerability of the exclusive proposition. Now this exhibits the real difficulty as to negative propositions: can we assume that subject and predicate have even by implication the same existential status? It appears that one of the commonest forms of negative judgment is the denial with respect to a subject thought in extension of a predicate taken purely in intension and actually having no existence within the universe of discourse. This lack of extensive implication is not, however, so facile as it seems at first sight; for the normal negative categorical directly and truthfully implies the coincidence with the subject of some measure of the contradictory of the predicate; even negatives, as we have seen, rest for their meaning upon some community of relevance between the terms; and the actual errors in negatives are once again a matter of restricted universes or of falsely put propositions. Still, negative propositions are especially prolific in interpretative error—error which practically arises chiefly in this way: a negative proposition, having for subject a negative, or “infinite,” term and for predicate a term taken inten-

sively only, eventually becomes a particular affirmative proposition, having for subject the contradictory of the original subject (that is, a definite extensive term) and for predicate the original intensive predicate. The truth of this depends upon the actual extensive existence of the original predicate, an existence which may be totally lacking. This once again points to the exclusive proposition. Beyond this, practical error is not apt to obtrude; since either the proposition remains negative, or the predicate falls into its contradictory.

One point already mentioned might be urged further in defense of the general assumption of obversion and conversion as regards negative propositions. It may be maintained that negatives which do not comply with that assumption are all properly not categorical but hypothetical. This, of course, is so to define the categorical proposition as to justify the traditional assumptions of "immediate inference"; but it may be supported on other and prior grounds, and, though it would mean a large and highly undesirable departure from the usages of language, it might be none the less necessary for theoretical rigor.

It should be noticed that, even if we make up our minds to this step, we are not saying, as has not seldom been said, that logic considers propositions as taken in pure extension. This doctrine would, of course, avoid many real difficulties; but it is not only extremely undesirable because of its divergence from usage but unnecessary for theory. We say merely that a proposition which has purely intensive import is properly hypothetical, and, if treated as categorical, may develop false implications. For how may a predicate, even of a negative proposition, be purely intensive—with no extensive implication? Only if the subject is really a condition not stated as fulfilled; only, that is, if the obverse and converse relations be problematic, not partial or contradictory.

To revert to the point of departure: it seems that if we accept the assumptions which Dr. Keynes names and which are implicit in the procedures of "immediate inference," those procedures are valid and without prejudice to the doctrine of the distribution of terms, subject or predicate. And if those assumptions be refused, the harm done is to "immediate inference," not to the doctrine of distribution. Nor does that doctrine itself involve the treatment of propositions in pure extension, much less any quantification of the predicate. It does, to be sure, imply that all terms in categoricals have at least the possibility of application, extensive or denotative; but all we need know in order to say a predicate is distributed is that, if it be taken as having application, the assertion made covers the whole extent thereof.⁴ The distribution of terms, that is, is not a matter

⁴ Cf. Joseph: *An Introduction to Logic*, pp. 218 ff.

of the direct content of our judgment, but of what must be true of the situation to which our judgment is relevant; hence its basic methodological importance in real inference. Whether or not we distinguish between extension and denotation, and whatever the usage we adopt, are immaterial to this question of distribution. Whether we be speaking of the analysis of a genus into its species, or of the individual instances of a species, our term is distributed if our assertion is true of all the species or all the instances there are. If the term be singular, then in any assertion made of it it will be distributed, even though it have no extension in the sense of component species, since the assertion is taken as true of the only instance of the term there is.

This brings me back to Professor Toohey's paper, and especially to one contention which seems to me to illustrate a very common and harmful confusion:

There is an inconsistency in the logician treating the subject and predicate of a proposition as classes—an inconsistency which is masked by the ambiguity of the words *All* and *Some*. Each of these words may have a collective as well as a distributive force. . . . The rules of logic are based on the supposition that the subject term is used distributively, or at least that it is not used collectively. The words "distributed" and "undistributed" can not be applied to a term unless it is used distributively. In the proposition *All the angles of a triangle are less than two right angles*, the subject term, "angle of a triangle" is distributed; for it is used distributively. . . . But in the proposition *All the angles of a triangle are equal to two right angles*, no logician would speak of the subject term, "angle of a triangle," as either distributed or undistributed. Now when the subject and predicate of a proposition are considered as classes, the proposition can not convey any meaning unless both terms are interpreted in a collective sense, and if they are interpreted in this sense, the words "distributed" and "undistributed" can not be applied to them, any more than they can be applied to the subject of the proposition *All the angles of a triangle are equal to two right angles*. The words "collected" and "uncollected" would not be altogether inappropriate. If, then, the rules of logic presuppose that the subject is not used collectively, how can they be reconciled with a treatment of the proposition which imposes upon both subject and predicate a collective sense?

Now I am not anxious to defend the treatment of terms purely as classes, but I am interested to find a consistent usage for the words "collective" and "distributive," which seem to me to be involved in an evident confusion—especially in the text-books—which frequently interferes in the discussion of "distributed" and "undistributed," and which appears in the passage just quoted. I give the accepted doctrine from the text-book nearest at hand:

A general term is a name which is capable of being applied to a whole group of objects. . . . A collective term, on the other hand, is a name applied to a number of individual things when taken together and treated as a whole, as an "audience," an "army." It is important to distinguish carefully between general and collective terms. A general term is a name which applies equally to

each individual of the group; or, in other words, it is used of the individuals *distributively*. A collective name belongs to the whole, but not to the separate parts of the whole. Thus we say that "soldier" is a general name, and is used distributively of each man in a regiment. "Regiment," however, is a collective name for it applies only to the whole group, and not to the individual soldiers. Ambiguity sometimes arises from the fact that the English word "all" is used in both of these senses. . . .⁵

Fortunately text-books are seldom critically read; but even the uninfering sophomore, quite correctly in exegesis but most falsely in fact, is hereby persuaded that that there is a necessary alliance between "general term" and "distributive use," that no collective term can be used distributively, and that "general" and "collective" are contrasted and exclusive categories. Yet a moment's common-sense will tell us (as, indeed, often the books themselves inconsistently tell us) that the same term is frequently both general and collective, that if "distributive use" is to have any value at all it must be applied to collectives which alone can be used in any other way. And is "all" . . . "used in both of these senses"? Does "all" ever "apply equally to each individual member of the group"? The whole orthodox doctrine is sheer confusion on the one hand; between the individual members of a group of which the term is a name and the members of a group of which the term names the members, and on the other hand between distribution of meaning and distribution of predication. Let us simply say: Every term is either singular or general. Every term is either collective or not collective. These distinctions are independent and knowledge as to whether a term is singular or general tells us nothing as to whether it is collective or not. Further, in regard to the meaning of terms by themselves: Every term, singular or general, collective or not, distributes its meaning ("applies equally to each individual member of the group") to each member of any class of which it may be a member—*e.g.*, every table is a table; every Napoleon, Napoleon; every army, army. And no term, collective or not, distributes its meaning to each member of the class which it is or of which it is the name—*e.g.*, no soldier is a regiment ("regiment" never applies to "soldier"); no angle of a triangle is all the angles of a triangle. In regard to predication (terms in proposition): Any collective term may be used either distributively or collectively; *i.e.*, the predicate may be asserted of each member of the class or of the class as a whole. This is simply not pertinent to non-collectives, since only collectives represent a class.

Now the ambiguity of "all" is a matter of predication, not of meaning. We therefore agree that in logical propositions all quantity

⁵ Creighton: *An Introductory Logic*, 4th ed., pp. 50 ff. The treatment here is decidedly better than in most texts.

signs shall be used distributively. This is a mere convention for ease in handling plural quantity signs, which would otherwise, as collectives, be ambiguous. It is not a prescript to language, nor does it prevent our accurately representing statements which come to us with "all" or "some" otherwise used. And we can not say, as Professor Toohey and others say, that "the rules of logic are based on the supposition that the subject term is used distributively, or at least that it is not used collectively," so long as we separate, as Professor Toohey does, the quantity sign from the subject term. Collectives, singular and general, used collectively and used distributively, are constantly found in proper logical propositions. Nor can we say that "the words 'distributed' and 'undistributed' can not be applied to a term unless it is used distributively." Every "all" is not to be thought of as the propositional quantity sign and excluded from the subject. In Professor Toohey's example, *All the angles of a triangle are equal to two right angles*, "all" is not the quantity sign but an integral part of the subject term. "No logician would speak of the subject term, 'angle of a triangle,' as distributed or undistributed," because "angle of a triangle" is not the subject term; but "all the angles of a triangle" is the subject term, is collective, and is distributed. We have the same thing in *Any regiment is made up of soldiers*; where "regiment" is collective, general, used collectively, and distributed. In *Some regiments are clean-shaven* we have a general collective, used distributively, undistributed; in *The Fifth Maryland Regiment is famous*, we have a singular collective, used collectively, and distributed.

The most fundamental of Professor Toohey's objections to the distribution of the predicate I can merely notice, inasmuch as it is aside from the question with which I have here been concerned, and as it involves final questions of the nature of logic. The objection is "that the use of the doctrine of the distribution of the predicate involves a vicious circle. . . . The logician . . . first calls upon the student's knowledge of the implication of propositions to prove the doctrine, and then he bids the student call upon his knowledge of the doctrine in order to find out the implication." Now formal logic, truly, is not an empirical science; yet no matter how *a priori* we make our construction of logical theory, it must appeal to experience to establish its appositiveness to this world. And, moreover, it may be doubted whether we could achieve a logic at all did we not find for our analysis logical relations embodied in actual masses of judgment which we recognize as valid; and, at least in the process of learning and teaching, the appeal to justifying results is not only permissible but necessary. If this be argument in a circle, we shall have

to make the best of it; since it is a circle from which no human thought can ever escape.

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BOOK REVIEWS

La Philosophie moderne depuis Bacon jusqu'à Leibniz: Études historiques. GASTON SORTAIS. Paris: Lethielleux. 1920. Pp. x + 592.

At once ambitious and valuable is the series of works which Father Sortais is undertaking in these studies of the history of modern philosophy. If succeeding volumes are comparable to this first one in the series in fullness and explicitness of treatment, we shall have in the series a veritable encyclopaedia of seventeenth century philosophic thought—the century, of course, which created the atmosphere and formulated the problems of that epoch which is called “modern philosophy.”

The first hundred pages of the near six hundred forming the volume are devoted to certain sixteenth century precursors of Francis Bacon who were concerned with questions of method and authority—Pierre Ramus, François Sanchez, Giacomo Acontio, Everard Digby, William Temple, Nicholas Hemmingsen—men who were feeling, in various lines, after philosophic and scientific methods which could lead them away from the sterile scholasticism of the period to a more natural and direct investigation of nature, and whose speculative work constitutes an interesting parallel to the series of scientific achievements which began with the theories of Copernicus. With this preparation Father Sortais goes forward to a study of the topic of his Livre I, which is *l'Empirisme en Angleterre et en France*, devoting the remainder of the present volume to a study of the life, work, and influence of Francis Bacon. As outlined in his general plan, this is to be followed by other books devoted to *Réactions que provoqua cette poussée empirique; Déisme; the Philosophie du Droit; the Révolution Cartésienne; Cartésianisme en France; Cartésianisme à l'étranger;* and finally, the *Systèmes plus ou moins opposés au Cartésianisme: Philosophie scolastique, Scepticisme, Panthéisme de Spinoza, Sensualisme de Locke, Dynamisme de Leibniz.* This is at once an heroic and a fascinating programme, in its very statement suggesting the dramatic turn which the author sees in the speculative effort of the century: first the thralldom of empirical and mathematical method, later the uneasy struggle of the mind to free itself from the too exclusive yoke of these

powerful instruments and to discover truths to which they might lead but which they could not contain.

The method of the author is itself an interesting commentary upon his subject matter. The contents are organized as only could be by a man trained in scholastic method, with all formal explicitness; but the work itself is largely in the nature of a running exposition of copious reader's notes, the exposition following the materials with honest fidelity. Taken in connection with the full and careful notes, sources and passages, this gives an encyclopaedic value to the work which certainly assures its long usefulness. There are, too, many paragraphs of appraisal and summary which make the structure of the thought and the opinions of the author at once evident, frank even in their perfectly legitimate bias.

Virtually the volume before us is a monograph on Francis Bacon, giving first an account of his life and the motives actuating the composition of his works; second, an exposition of the Baconian classification of knowledge, which is rightly stressed as the very heart of Bacon's contribution; and lastly, a critical examination of the philosophy and influence of the great empiricist. Full bibliography, index, and analytic and synthetic tables of contents make the book a most workable reference.

Of the general aim of the work of Father Sortais not too much can be said in praise. Few students of the history of thought at this hour will doubt that the European development has reached one of the nodes of its changing course and that in a distinct and dramatic sense a period has come to its close. It is time that we should set about writing the story of this period—for it has never yet been done, and in particular not for the nations and years in which it received its essential color, that is, England and France in the sixteenth-seventeenth centuries. The author is beginning his work in the just locus, in time and space, and is treating his affair with an expansiveness proportionate to its importance. On the other hand, not he himself pretends that what he is giving is more than a study in materials. He justly observes that the perspective must grow out of the slow analysis of the works of men in relation to their times, and his volumes will, in a sense, be propaedeutic to the vivid characterization of the thought of the Northern Renaissance (for Bacon to Bergson comprise this) which some future day will give.

Meantime for the picture of Bacon himself we may be thoroughly appreciative. The influence of his classification of knowledge has been very much greater than books have recognized, affecting the whole encyclopaedic and educational, and hence investigative programme of modern times: our reference books, catalogues and cur-

ricula are all essentially Baconian, and it may well be doubted if the influence of the philosopher in this field of organization is not truly speaking of far greater significance than his popularization of the inductive method. We say "popularization" with intent, for it is far less to Francis than to Roger Bacon that its emphatic discovery is due. Indeed, it is the most striking weakness of Father Sortais's book that he suggests no relationship of the thought of the two great Englishmen. The recent readings of the cipher manuscript of Roger Bacon by Professor Newbold are throwing an amazing light upon the discoveries of the latter. Further studies of the history of the manuscripts of Friar Bacon bid fair to establish beyond cavil the continuity of the Roger Bacon tradition down to Elizabethan times and in the very circles in which Francis Bacon moved. It may, indeed, turn out that the Jacobean chancellor of the seventeenth is but the perpetuated tongue—like the traditional head of speaking bronze—of the half-heretical Oxford prisoner of the thirteenth century. Of all this Father Sortais appears to know not even what should have been guessed apart from the manuscript discoveries, and the lack is likely to call for a rewriting of his chapters at some not distant date. And a knowledge of the strange twinship of the two Bacons may go far yet to explain that curious duality of Francis Bacon's character which Father Sortais (apologist for the chancellor as he often is), along with others, finds therein. For we can not quarrel with his final picture: "The physiognomy of Bacon, author of the *Novum Organum* and chancellor of England, unconquerably evokes the antique image of *Janus bifrons*. Hence, even with all indulgence, History, that it may remain impartial, can only with reservation bestow upon him the eulogy of greatness, for moral grandeur, which naught else may supply, was wanting in him."

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JOURNALS AND NEW BOOKS

SCIENTIA. July, 1921. *National Contributions to Geology* (pp. 1-12): J. W. GREGORY (Glasgow).—Rapid survey of the history of geology, bringing out its cosmopolitan character. *La constitution de l'individualité. II. L'individualité psychique* (pp. 13-24): AUGUSTO PI SUÑER (Barcelona).—A recommendation of behaviorist psychology. *Les idées nouvelles sur la suggestion* (pp. 25-32): C. BAUDOUIN (Geneva).—Suggestion, fallen into disrepute, has again been rehabilitated by M. Émile Coné and his disciples, forming the

new school of Nancy in psychiatry. According to them all suggestion is auto-suggestion and not subjection to another. It works subconsciously but not automatically. A suggestion can not be suppressed except through replacing it positively by another. Conscious fighting against it often accelerates it. So suggestion must be distinguished from will, which proceeds by effort. In a way, this theory is a scientific application of what is vaguely known under the name of the influence of "morale." *Problèmes financiers d'après guerre*. II. *Prélèvements sur le capital* (pp. 33-54): CORRADO GINI (Padua).—A discussion of confiscatory taxation, especially of the disadvantages of a tax on capital. *Reviews of Scientific Books and Periodicals*.

Diderot. *Entretien entre d'Alembert et Diderot, Rêve d'Alembert, Suite de l'Entretien*. Collection des Chefs-d'Œuvre Méconnus, with an introduction and notes by Gilbert Maire. Paris: Éditions Bossard. 1921. Pp. 193. 12fr.

Goblot, Edmond. *Le Système des Sciences: Le Vrai, l'Intelligible, et le Réel*. Paris: Armand Colin. 1922. Pp. 259. 7 fr.

Güttler, C. *Einführung in die Geschichte der Neueren Philosophie des Auslandes*. München: Ernst Reinhardt. 1922. Pp. 221. 15 m.

Pound, Roscoe. *The Spirit of the Common Law*. Boston: Marshal Jones Co. 1921. Pp. xiv + 224. \$2.50.

NOTES AND NEWS

We have just learned of the death of Mr. L. E. Hicks of Berkeley, Calif., in November 1921. Mr. Hicks contributed a number of articles on logic to the JOURNAL during the last few years.

Professor Ralph Barton Perry has recently begun his tour of lectures at the provincial universities of France for the Hyde Foundation.

THE JOURNAL OF PHILOSOPHY

DEMOCRACY AND MORALS

IN an article by Cohen that appeared in the *New Republic*, March 17, 1920, and in the article by Sheldon in this JOURNAL, June 6, 1921, certain misrepresentations of Dewey's conception of democracy are so persistently ascribed to Dewey as to raise the question whether Cohen, Sheldon and others are really criticizing the thing to which alone Dewey applies that term, namely, *moral democracy*. Since the Revolution it has been popularly assumed—i.e., by those who do not reflect critically—that democracy means liberty, in the sense of the absence of law and social control; fraternity, in the sense of the absence of ranks and titles; and equality in the sense of equal control exercised by all alike over the material and spiritual resources of society. The readers of this JOURNAL surely do not require proof that these "ideals," taken separately, are unnatural and, taken together, are mutually incompatible. Liberty, so conceived, is incompatible with equality as defined; and since men differ by nature in taste and capacity, fraternity as conceived by the revolutionists can never be anything but an affectation. The rank of a man is indeed but the guinea's stamp, and the man's the gold; but the immortal Burns knew better than most that men differ in metal and that merely stamping them does not always make guineas.

It is difficult for any student of life to enter sympathetically and intelligently into the viewpoint and method of another, but progress in the discussion of philosophical problems depends upon our making the effort. The signers of this paper accordingly venture to say that the key to Dewey's use of the term democracy is liberty, rather than equality, but not the liberty of the revolutionists, not liberty in the merely negative sense of the absence of restraint and control. Liberty means the absence of arbitrary restraint, of unjust control: liberty is opportunity to do right: but the moral meaning of the word is, simply, opportunity for each and all to beat their music out, to live the best life they are capable of, to make the best contribution to the material and spiritual resources of society they can. When one considers what an unformed mass of possibilities each child is as it comes into the world, the applications of this realistic conception of liberty are many and clear. All the activities of science, for example, and all the social institutions that stimulate

and encourage them, are included in this conception of moral democracy. In the words of President Lowell, "Is it or is it not desirable that men in the community should yield as much intellectual output as possible? If it is, how is it undemocratic in men any more than in cows? Do not let us be deceived. Let us remember that after all the greatest asset of a community is not its mines, or its soil, but its men; and that it is for the interest of the whole community that every man should be developed to the utmost point to which he can be developed." By moral democracy, Dewey means a community in which each member finds heroic stimulation and encouragement to be and do his best. "The end, the right and only right end, of man, lies in the fullest and freest realization of powers in their appropriate objects. The good consists of friendship, family and political relations, economic utilization of mechanical resources, science, art, in all their complex and variegated forms and elements. There is no separate and rival moral good; no separate, empty and rival 'good will'" (Dewey in Dewey and Tuft's *Ethics*). "Harmony, reinforcement and expansion are the signs of a true or moral satisfaction. What is the good which while good in direct enjoyment also brings with it richer and fuller life?" Richer and fuller life includes pure science, art, worship and contemplation, the development and enjoyment of wealth, the making and administration of law, and other enterprises. This is a circular definition, of course; for this philosophy is founded in the notion of inherent value, namely in the notion of the inherent value of the experience of value. Contemplation is accordingly either good, bad or indifferent; to say that this philosophy has no place for contemplation is a misreading of it. All political activities are tested by this question: Do they tend to stimulate and develop the capacities of individuals in ways that render them available for the social good?

The good, according to this philosopher, consists of self-conserving and self-promoting activity, *i.e.*, of activity that in its results tends to reinforce and expand itself; and the similarity of this conception to a possible interpretation of the Kantian maxim is obvious. However, this abstract formula in its sweeping generality is practically useless: it gives little or no help to anyone confronted with an actual moral issue. This consideration leads to the conclusion that the real value of an act is unique, that each concrete moral situation has its own good; and this means that moral values are immediate and concrete, not abstract and conceptual. It does not mean that the good is idiosyncratic or fanciful. The good of each moral situation is as universal as an oak tree, as real as the first president of the United States.

In a moral democracy, conflicts of claim occur naturally and in-

evitably, and where they occur this ideal means that the parties concerned refer their claims to a common good and coöperate in achieving that. That Dewey recognizes the function of government in settling such conflicts is evident in page after page of his ethical discussions. Thus, he remarks that no other such instrument as the courts with their juries was ever devised for mediating social order and progress. Again, every right, civil or political, carries with it a corresponding duty and the only fundamental anarchy is the laying claim to rights without acknowledging corresponding duties. The enforcement of duties through law and its administration is abundantly provided for in this theory of society. That Dewey believes the acquisition and ownership of private property to be a moral good, no student of his ethics can question. Like most modern writers on politics he regards public judgment as a most important sanction of law, but he recognizes the usefulness and necessity of force intelligently applied.

In the light of these teachings of Dewey, so familiar that apologies are in order for reciting them, what is to be said of Cohen's statement that Dewey has deliberately chosen between the gospel of mastery over nature and mastery over self and rejected the latter? Cohen states that according to Dewey all ideas are and ought to be "instruments for reforming the world," that Dewey uses the word practical to mean tending to reform the *cosmic scenery* of human life. According to Dewey, however, the *human self* is a part of nature; a human community is as much a natural phenomenon as a community of beavers. Dewey holds that the particular part of nature that today most needs scientific treatment leading to "mastery" over it is the part that never yet has received such treatment, namely, the human community and especially the human self. He reiterates exactly the opposite of the doctrine that Cohen ascribes to him. He enforces the necessity of applying the organs of scientific intelligence to *human* nature in order that the manifold problems of politics, economics, preventive medicine, international society, *etc., etc.*, can be solved through effective self-direction. It is to the end of human self-mastery that Dewey teaches "reconstruction in philosophy." The Baconian slogan, Knowledge is Power, as interpreted by Dewey, means that before man can hope to master the social conditions (the "scenery" of Cohen) of human life, he must take the pains to study and know them adequately. As the present writers understand *Reconstruction in Philosophy*, that is the particular reconstruction the author of this book is talking about.

Cohen and Sheldon insist that Dewey teaches a gospel of equal development for all. Sheldon writes, in his discussion of Dewey's late book: "Equal development is undesirable; it would indeed be

fatal to progress. It would render society as monotonous as the desert; it would do away with the beautiful economy of the division of labor, with individuality, with unique achievement. The social democratic heaven of equal development would reduce personality to nothingness"—as if all this had any bearing on Dewey's philosophy! "We do not wish to make men equal through and through; we do not wish the ordinary man to be *capable* of doing the work of the expert; equality should pertain only to certain elementary necessities of life" (*italics added*). To the present writers this social philosophy contrasts violently with that of Dewey and Lowell; but it is impossible for us to understand how anyone can ascribe the dogma of equal development for all to Dewey. In his books on education he warns against the standardization of school children. The individual for Dewey has a duty to develop to the utmost his particular bent; but since it is good to grow competitively, handicaps should be removed. Unless distinction is competitively gained, both the individual and the community suffer.

Dewey writes that "regard for the happiness of others means regard for those conditions and objects which permit others freely to exercise their own powers from their own initiative, reflection and choice." Perhaps this doctrine is what Cohen and Sheldon have in mind as the doctrine of equal development for all. In Dewey's thought the socially available capacities of each should find stimulation and heroic encouragement in the "conditions and objects" that make up his social and physical environment, and he has in mind the brilliantly endowed just as much as the slow and dull. Those who have heard Dewey in the lecture room are amazed to learn that he wishes "the best endowed to put off their progress until the least endowed have come up to their level." On the contrary, he has both advocated and practised special individual training for the best endowed as well as special training for the mentally retarded.

The misreading of Dewey on the part of Cohen and Sheldon is due to a failure to understand what he means by *moral* democracy. What he teaches is not equality of possessions either material or spiritual, but equality of opportunity for each to make the best contribution to the material and spiritual life of mankind that he is capable of. Uniqueness of personal achievement is precisely the thing that Dewey does believe in, teach, and practise. That these two writers should ascribe to him exactly the opposite doctrine, that they should say he teaches a levelling process in possessions both material and spiritual, must strike every thorough reader of Dewey as strange indeed. Democracy in Dewey's conception is perfectly compatible with the meteoric achievement of a Shakespeare or a Newton; it is not incompatible with the mysticism of St. Francis or

Luther: it is not incompatible with the achievements of those modern captains of industry who have contributed enormously to the wealth of society or with their enormous rewards for doing so. The democracy he teaches is fundamentally ethical. Democracy in the sense of equal *amounts* of control over the spiritual and material resources of society, democracy in the sense of mob-rule, democracy as a levelling process, democracy in any sense that is a menace to spiritual values or to unique personal achievement, is foreign to his thought. Dewey is trying to forge an instrument that can be used effectively in the solution of personal and social problems, the objective being a community in which each man shall find encouragement to be contentedly and effectively himself.

Sheldon and Cohen both find fault with Dewey for not stating just what conditions and circumstances will environ us in that society, for not stating just what customs, laws and institutions are supremely just, beneficent and efficient. If anyone only knew! Surely the writers of these articles do not exact omniscience of the ethicist! Or demand that he teach some particular economic doctrine! Desires, inventions and changing circumstances condition in detail the organization of the community from day to day: the conflicts, competitions and triumphs of men help to determine it: and intelligence can not anticipate these in detail. "Democracy," says a writer in the *Atlantic*, "is a gamble on the reasonableness of human nature," but its method of achieving results is, within limits set by the concept of democracy itself, competitive. If human beings are essentially moral beings, as we assume they are, we must believe that all customs and institutions ought to be educative in their effects on human lives, that wealth and property ought to be subordinated to personality in our scale of values, and that every man who can ought to use his intelligence reverently and scientifically to forge a moral future out of the given present. To this end, philosophy can reasonably be expected to furnish an adequate methodology. Democracy exists only where communities daily conquer it anew, and it is part of its working *credo* that the world evolves through that effort.

This we believe to be part of Dewey's meaning, and we find it antagonistic to nothing in civilization that we habitually regard as precious. It is antagonistic to the belief that, before the determination of individual powers and individual distinction by competitive behavior, "some men are born horses while others are born with saddles to ride them." It affirms that no one should be prostituted to the status of a mere tool of another's will; for the exhortation of Kant is the acme of good sense, "Treat *humanity*, whether in thyself or another, always as an end, never as a means." In *Reconstruction in Philosophy*, an elementary presentation, Dewey emphasizes—

perhaps he overemphasizes, if measured by the standard of a complete and symmetrical system of philosophy—the instrumental theory of knowledge; but this means at most that those who study his teachings will do well to read his logical discussions in conjunction with his moral, educational and political philosophy. Whether he would subscribe to the statement, we do not know, but some of his writings suggest to us the doctrine that the inherent values to which concepts are instrumental are ultimately *inter al.* moral values.

It is not so much Dewey's philosophy as the facts of nature that negate the idea of identical development for all and the idea of equal participation in control over social resources. These facts of nature are canvassed by Dewey in various writings, and his theory squares with them. Pure science, art, worship and play are from his standpoint normal activities of human beings, human functions that certain customs of modern life tend to pervert or suppress. We hire priests to do our praying for us, professional singers to do our praising, ball teams and actors to do our playing, and scientists to do our thinking; meanwhile, we devote ourselves to a mad scramble for ability to buy things, or for a maximum of economic control, and wonder at the poverty and barrenness of all our lives. Is it "dangerous" to call attention to the fact that the spiritual enterprise of reconstructing and mastering the self is not an enterprise entirely different from that of understanding and controlling "the cosmic scenery"? Sheldon sees fit to warn his readers because Dewey has been studied and quoted by malcontents. The implications of the warning are obvious to all who cherish the wisdom of Amos and Socrates, and a solution of the question of the method of determining the dangerous or safe quality of moral ideas can not be reached in a summary fashion. The way of Dewey is to appeal to the process of history and the long-run confirmation of ideas by consequences. In his social philosophy Sheldon appears to favor medieval realism and the logic of formal authority and the Index.

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DR. A. N. WHITEHEAD'S SCIENTIFIC REALISM

"A N -ism," it has been well said, "is by its inmost being always in opposition," and the conditions which have governed the development of current realism have undoubtedly given it, for good or evil, a markedly protestant character; but the question whether the defects of this general attitude outweigh its merits must here be dismissed with the remark that not the least hostile influence oppos-

ing the new tendency has been the subjectivist aspect—whether frankly such or masked as “idealist”—of contemporary science. It serves no purpose, again, to discuss the reasons for this state of things; the fact must just be accepted. But this suffices to give to any exception from the general rule an unusual degree of importance; when therefore a mathematician and physicist essays “the basis of a natural philosophy which is the necessary presupposition of a recognized speculative physics”¹—reorganized, that is, in accordance with recent developments—when he approaches his subject as an out and out realist, preluding his theory by an emphatic protest against subjectivism, the course of his investigation at once assumes the highest degree of interest.

Mark first of all the uncompromising emphasis of Dr. Whitehead's protest. “There is now reigning in philosophy and in science an apathetic acquiescence in the conclusion that no coherent account can be given of nature as disclosed in sense-awareness without dragging in its relations to mind. The result has been disastrous both to science and to philosophy.”² Even if philosophy is less apathetic than Dr. Whitehead supposes, still this is sufficiently provocative; it raises most of the questions at issue at the moment. What, *e.g.*, is nature? Nature, for Dr. Whitehead, is what “we observe in perception through the senses; something which is not thought and which is self-contained for thought.” Nature is “independent of thought” in the sense that it “can be thought of as a closed system whose mutual relations do not require the expression of the fact that they are thought about” (p. 3). In saying this Dr. Whitehead is fully aware that his position is not, metaphysically, final. But he is not aiming at “metaphysical doctrine”; all he desires is so to delimit the content of Nature that that content can be investigated and systematized without confusing the inquiry by any references to mind, which, whatever else it is, is not, primarily at least, nature. He posits no metaphysical “disjunction of nature and mind” (p. 4), but accepts their intimate relation and union; he merely wishes reflectively to extend the unreflective attitude of everyday experience, which puts “things” on one side and “mind” on the other, to scientific thought in general.³

Nor can it be objected that such a procedure, when it does not ignore the issues, simply begs the question. Problems remain in plenty; how, *e.g.*, “factors” become differentiated from “fact” on the one hand and from “entities” on the other (p. 13); the relation,

¹ *The Concept of Nature*, by A. N. Whitehead, p. vii.

² *Ibid.*, p. 27.

³ P. 29: “adopting our immediate instinctive attitude towards perceptual knowledge.”

again, between sense-awareness and thought (p. 14); the relative logical priority of fact and factors; and many another. The point here is that these questions must be assigned their proper position; their discussion must not be constantly introduced into the investigation of Nature, as an "illegitimate importation into the philosophy of natural Science" (p. 28)—as in short one of those metaphysical red herrings which disport themselves in the ocean of thought. Certainly epistemology is in one aspect a natural science on precisely the same footing, *e.g.*, as physiology; but I think that Dr. Whitehead's treatment fully justifies his conclusions, despite any philosophic comments which may quite justifiably be made on them; and it is then the realism of his developed position which appears to me as important as it is unusual.

It is not, in the first place, a noumenal realism; both "real" substratum and "phenomenal" attributes are dispensed with, as depending on "a distinction which is no distinction at all" (p. 16); and with these, again, "primary" and "secondary" qualities⁴ (p. 27); the philosophy of science then becomes "the philosophy of the thing perceived. Everything perceived is in nature. We may not pick and choose. The red glow of sunset should be as much part of nature as are molecules and electric waves. It is for natural philosophy to analyze how these elements of nature are connected, refusing to countenance any theory of psychic additions to the object known in perception" (pp. 28, 29). There are not, in brief, two natures, one "apprehended in awareness," and the other "the cause of awareness"; "there is but one nature, the nature which is before us in perceptual knowledge" (p. 40); and this "one nature," finally, is itself not merely apparent, as contrasted, *i.e.*, with "conceptual formulæ of calculation" such as molecules and ether (p. 45).

Dr. Whitehead's adoption of such a definite standpoint, enforced by the arguments set forth in the first two chapters of his book, undoubtedly constitutes a weighty confirmation of the main contentions of realism, doubly valuable and encouraging as coming from an independent and (primarily) non-philosophic quarter. It marks, it is to be hoped, a turning point in the course of discussion. Science, hitherto a powerful, even if passive, ally of subjectivist ontology, promises to transfer her support and allegiance to the opposite camp.⁵ For Dr. Whitehead is by no means alone in his views, although he has given them more precise and systematic form than

⁴ It may be of interest to point out that before Locke, to whom Dr. Whitehead seems to assign this distinction, it had been endorsed by two great scientists—Boyle and Galileo.

⁵ Dr. Whitehead's psychology, as very briefly outlined on p. 188, seems to be, however, unnecessarily subjectivist. I can not help thinking that his whole position would be improved by the extension of realism to this aspect of the subject.

any of his collaborators. The investigators of radio-activity and its developments are prepared to accord to electrons, atoms, and molecules, with their mass properties and spatial configurations, a reality that is continuous and truly consubstantial with that of the macroscopic objects of every-day experience.⁶ Realism of this type, again, appears to me to accord with Platonic and Hegelian idealism, so long as it does not explicitly question those presuppositions in virtue of which, as realism, it exists. But these Dr. Whitehead, from his scientific standpoint, is entitled to ignore; they lie, as he contends, outside his province, and to force them into prominence only confuses the issue; and confining myself in the main to the same point of view—"endeavoring to exhibit the type of relations which hold between the entities we perceive as in nature" (p. 45)—I should like to consider his results. It is peculiarly difficult, however, for those who are principally interested in philosophy to appreciate the precise character of Dr. Whitehead's aim. He is concerned with the known content of Nature, with its adequate description and analysis; so that considerations of genesis, whether psychological or epistemological, as also of logical priority, either do not arise at all or enter into the discussion only indirectly and remotely; and unless this is constantly borne in mind his work can not be properly appreciated.

1. There appears to be a fundamental difficulty at the outset, in the explication given on pp. 13-15. "There are three components in our knowledge of nature, fact, factors, and entities. Fact is the undifferentiated terminus of sense-awareness; factors are termini, differentiated as elements of fact." Next, "the immediate fact"—undifferentiated, that is—"is the whole occurrence of nature as an event present for sense-awareness, and essentially passing. The ultimate fact (undifferentiated), for sense-awareness is an event. This whole event is discriminated into partial events." Thus, beginning from nature, we have two parallel divisions of one and the same total content, (a) as "fact" into "factors" and (b) as "event" into "partial events"; and since both factors and events derive from the same original totality—since all the factors make up the fact which is again the whole event made up by events—then it would seem that events and factors must be somehow equivalent to each other; factors, *i.e.*, must be events, and events, factors. But this is not the case; for there are "other factors in nature which are not events."⁷ But if this is true, then it would seem to follow either (a) that the whole of events is not really a whole, because it omits some factors;

⁶ Cf. *Nature*, Nov. 6, 1919, p. 230.

⁷ Cf. p. 124—"other factors of nature which do not share in the passage of events."

or (b) the whole is not an event, because it contains factors which are not events. Both alternatives materially affect Dr. Whitehead's theory of time and space, because these are "abstractions from events."⁸

The obscurity on this point is increased when these factors which are not events become later on defined as "objects"; for some objects at least are only intellectual abstractions. "Objects for our knowledge may be merely logical abstractions . . . the object . . . is a mere abstract concept . . . an abstract relation, although it is there in nature" (p. 126). Obviously we have travelled a long way from sense-awareness and its content; and I recur to the subject later on in connection with "moments."

A somewhat similar ambiguity marks the more special treatment of time in Chap. III. Again we find (p. 49), "in the first place there is posited a general fact; something is going on; there is an occurrence for definition." At first sight this seems to accord with the preceding statement already considered; we have a totality which is an event, and which may be further distinguished either into events or into factors; but the fact which was previously defined as the undifferentiated terminus of sense-awareness, here comprises two "sets of entities, entities perceived in their own individuality and other entities apprehended as relata." The first are then "discerned," and constitute "the field directly perceived"; the others are "discernible" and are in relation to the discerned—directly perceived—field; and "this complete general fact is the discernible and comprises the discerned." How then can "fact," or "complete general fact," be undifferentiated? There are two alternatives: (a) it falls apart into the two mutually exclusive divisions of discernible and discerned; or (b) it is discernible and includes (comprises) the discerned, but if so, it can only be discernible relatively to something discerned. Both alternatives therefore imply differentiation. "Fact," *i.e.*, has lost its primary undifferentiated character, as is further shown by its constituents now being "relata in definite relations to some definite entities in the discerned field." Thus the primitive absence of differentiation has given place to definiteness of relation.⁹

2. But let us accept this distinction between discernible and

⁸ Cf. p. 13—"in the course of analysis space and time should appear." It is important to notice Dr. Whitehead's attitude on this point as compared with Professor Alexander's theory of space and time. For him "Space-Time is the stuff out of which all existents are made. Existents are complexes of Space-Time" (*Proc. Arist. Soc.*, Vol. XVII, p. 417, and *Space, Time and Deity*). For Dr. Whitehead, on the other hand, "space and time spring from a common root, and the ultimate fact of experience is a space-time fact" (p. 132).

⁹ "Discernible" again has two senses: a wider on p. 50 ("complete general fact"), and a narrower on p. 53 ("general present fact").

discerned. The next important point is Dr. Whitehead's exposition of the connection between Nature and sense-awareness. He has carefully worked out the relations between sense-awareness, mind and thought; and if it were possible to do so I should refrain from any further discussion; the subject pertains, as Dr. Whitehead contends, to mind rather than to Nature.

But his position here has so important a bearing on his philosophy of Nature that some comment is unavoidable. He seems to me to have followed that perilous tendency which (as a reaction against subjective idealism) attends all realism—that is to attach undue importance to sense-awareness, as such. He tends to hypostatize sense-awareness, to isolate it overmuch from mind operating as a whole, somewhat as faculty psychology distinguished between will and thought and feeling. Consider, *e.g.*, the assertion (p. 14) "the immediate fact for awareness is the whole occurrence of nature."¹⁰ Obviously this can not be taken literally; no one can be sensibly aware of, or even perceive, the whole of Nature. Given the conditions, Nature may be discernible or perceivable or "awarable";¹¹ and then molecules, electrons and electric waves are "parts of nature" (p. 29). They would appear therefore to be "natural entities"; but on the other hand "entities are factors," and "factors are termini of sense-awareness," which "discloses factors which are the entities for thought"; further, the relations "between natural entities are themselves natural entities—factors—there for sense-awareness" (pp. 12–14). This is sufficiently definite;¹² but plainly in two directions—with regard to Nature in its entirety as in its minutest constituents—the two terms, sense-awareness and perception, bear the widest possible meaning; for in both aspects Nature actually becomes known through sense-awareness supplemented by conception, inference and calculation; but in both aspects, again, Nature is real; for "scientific laws are statements about entities in nature; molecules and electrons are factors in nature" (pp. 45, 46).

But when Dr. Whitehead undertakes a more systematic analysis of Nature, results vitally different are obtained as to the "entities posited for knowledge in sense-awareness." In Chap. III. we find that what may be called the unit factor or initial datum of these natural entities is a complex "event—a place through a

¹⁰ Cf. also, "the philosophy of science is the philosophy of the thing perceived. Everything perceived is in nature. Nature is that which we observe in perception through the senses" (pp. 28, 29, 30).

¹¹ Cf. p. 52, "signified events include events in the past as well as the future"; an event being "a place through a period of time."

¹² *Ibid.*, "the complete general fact which is all nature now present as disclosed in sense-awareness."

period of time"—a complex, *i.e.*, within which space, time, and other entities may be discriminated. The totality of simultaneous events constitutes another fundamental datum, a "duration, a complex of partial events"; and both events and durations possess, essentially, "temporal thickness"—"a duration is a concrete slab of nature, an essential factor disclosed in sense-awareness; not a mere abstract stretch of time." It is, in short, a longer or briefer process of nature just as it happens in time—filling up time as it were.

Contrasted with this is the "moment," as the content of "all nature at an instant," with "no temporal extension" or thickness; and then it is essential to the whole of Dr. Whitehead's developed theory that while durations (including events), being "directly yielded to knowledge by sense-awareness," are definite natural entities and "have all the reality that nature has," the moment on the other hand "is not itself a natural event; in truth there is no nature at an instant"; it is a nonentity; Dr. Whitehead, in short, adopts what may be called a quantum theory of temporal nature.¹³

Now on what is this fundamental contrast founded? It is based, consistently with Dr. Whitehead's acceptance of sense-awareness as the criterion of natural content, on the evidence afforded by that type of consciousness. "There is no such thing as nature at an instant posited by sense-awareness. What sense-awareness delivers over for knowledge is nature through a period. Accordingly nature at an instant is not itself a real entity"; it is at best "a very useful concept."

This course of argument seems to raise two serious difficulties. In the first place, even if we accept the content of sense-awareness as our criterion, the question of the real existence of moments is determined by precisely the same method as is that of the real existence of electrons and molecules; that is, by a process of inference or reasoning.¹⁴ This process, no doubt, must begin from the real data of sense-awareness; but it is impossible to maintain, in either case, that the truth of the conclusion can be determined by sense-awareness as such, no matter how wide a meaning be given to this term. But Dr. Whitehead regards molecules and electrons as real existent factors in nature; moments, on the other hand, are *not* natural entities. And his ground for this denial of reality is not that it is irrational or inconceivable, but simply that it is not a deliverance of sense-awareness—"there is no such thing posited by sense-awareness." But exactly the same may be said of electrons

¹³ It may elucidate Dr. Whitehead's position to refer to Lotze's distinction between empty time as "a creation of our intellect" and "the succession belonging to (the operation of things) itself, which is the most proper nature of the real." *Metaphysic*, I, pp. 350, 354.

¹⁴ The exact logical character of this process is here immaterial.

and molecules. Sense-awareness combined with one course of reasoning gives us the idea of moments; these Dr. Whitehead regards as unreal, ultimately because sense-awareness, delivering nature through a period, does not posit them. Sense-awareness again, combined with another course of reasoning similar in character though differing in details, yields the idea of electrons; but these are real, although sense-awareness (purely as such) plainly does not posit these either. Thus the merely negative verdict of awareness is endorsed in one case, but repudiated in the other.

But as I have already pointed out, Dr. Whitehead admits the existence of natural factors—"there in nature"—which though "not posited by sense-awareness may be known to the intellect—not disclosed in sense-awareness but known by logical inference as necessarily in being" (pp. 125, 126). These entities may be of fundamental importance; *e.g.*, "identity of quality between congruent segments is generally of this character"; and the theory of congruence occupies the whole of Chap. VI. Thus Dr. Whitehead accepts the general principle that logical inference may contribute to the determination of the content of nature; so that it appears quite illegitimate to rule out the existence of moments simply on the ground that they are not posited in sense-awareness.

I am not of course arguing that moments have real existence, nor am I resorting to any metaphysical theory to decide the question; I merely suggest that Dr. Whitehead's arguments, as they stand, are insufficient to establish the nonentity of moments. And this leads to the second difficulty attending his position; for it is by no means so certain as he assumes it to be that sense-awareness does actually posit events or durations having temporal thickness or persistence. Again I do not deny the existence, within the content of sense-awareness, of durations in Dr. Whitehead's special sense; but there are weighty considerations which he has ignored which make it impossible to accept this durational character as pertaining to nature itself merely on the evidence of sense-awareness.

For it is possible that the durational aspect of this content is partially or even completely deceptive, and arises from the conditions determining consciousness; conditions which are of course in no sense metaphysical but purely natural, as Dr. Whitehead himself points out on p. 107. I do not assert that this durational character *is* deceptive, but only that this possibility is not absolutely excluded by Dr. Whitehead's theory; so that duration may be an added quality conferred by sense-awareness itself¹⁵ upon its content even while that content is at the same time a natural reality (or a nature) wholly non-durational. It is true that Dr. White-

¹⁵ Not, be it noted, by any other (ideal or conceptual) type of consciousness.

head refuses, on what are, I think, good grounds, "to countenance any theory of psychic additions to the object known in perception" (p. 29). But this does not exclude the possibility—I suggest nothing more—of awareness or observation conferring its own durational character¹⁶ upon a durationless nature: and the same applies to the remarks on p. 187. That the duration does not wholly pertain to Nature is a fact of elementary psychology; but it is further by no means inconceivable that a completely non-durational nature may give rise by perseveration and after-imagery within sense-awareness to a durational content. Were we to assume indeed that electrons were perceivable, then their enormous velocities and infinitesimal dimensions would result in something closely approaching if not identical with this state of things.¹⁷

These considerations in no way alter the problem of natural philosophy. That is still, in Dr. Whitehead's words, "to discuss the relations *inter se* of things known abstracted from the bare fact that they are known" (p. 30). But knowledge must not be wholly identified with sense-awareness; rather must the latter be criticized in the light of fuller knowledge in order to ascertain what distinctions, if any, obtain between its special content and Nature itself. Dr. Whitehead, however, prevents this being done by anticipation; for the two conditions which he assumes¹⁸ for durations preclude in advance any possibility of the reality of moments. "Nature," in short, "is nothing else than the deliverance of sense-awareness" (p. 185).

And fundamentally difficult though it undoubtedly is to regard an event as a sequence or sum or group of instantaneous moments, still Dr. Whitehead's later theory of "objects" seems to leave us no other alternative. An event, as we have seen, has (essentially) "temporal thickness"; and it also (as a whole) "passes." Still this in itself does not, I think, prevent us from thinking of an event as containing within itself constituents which, although they possess the slightest possible temporal thickness, and are therefore not instantaneous, still do not themselves "pass." There does not seem to me to be anything illogical about this possibility; Dr. Whitehead, however, excludes it by definition. For any element in nature which does not pass is an object; and an object is not an event; the characteristics of the two are mutually exclusive, in spite of their inseparability.

¹⁶ In fact Dr. Whitehead points out the "passage of sense-awareness and of thought"; i.e. of sense-awareness as an activity—"a procedure of mind"—not as a content or terminus. But here again his distinction between passage and duration seems quite arbitrary, or even to have a metaphysical basis! (Pp. 66-73.)

¹⁷ Cf. the express train illustration, p. 109.

¹⁸ P. 60; that it is an assumption is obvious.

arable inter-connection (pp. 143, 144, 169). Now blue is one object; a coat is another and an electron is a third; and I think it is undeniable that all these have temporal thickness; by which (with Dr. Whitehead) I do not mean "a particular second at a definite date" (p. 149) but rather the temporal raw material given in awareness out of which dates and seconds are obtained, it matters not how. Thus objects, as such, have temporal thickness.¹⁹ Any constituent of an event therefore which has any temporal thickness, no matter how slight, and which does not pass, is not an event, but an object; so that the only possible ultimate events proper must be instantaneous. As I have said already, Dr. Whitehead seems to me to avoid this conclusion only by the prior assumption of properties of duration which exclude it in advance (p. 60). Still we may in a certain sense speak of "an object at an instant" (p. 161); what then distinguishes this from an instantaneous event? Plainly the fact that in obtaining temporal thickness it does not pass; or in other words that the event, to be an event, must retain its passage even while it assumes temporal thickness. To say that this reduces the event-particle or the moment to an abstraction is no valid objection, for "to be an abstraction . . . means that its existence is only one factor of a more concrete element of nature" (p. 171).

The exact meaning of the passage however is somewhat uncertain. "Each duration happens and passes. The process of nature can also be termed the passage of nature" (p. 54). This seems to mean that events come into being and pass away, which would constitute their uniqueness; objects, on the other hand, do not pass. The idea certainly appears to imply activity; and on p. 185 passage is given as an alternative for activity. This however would imply that objects are never active. At the same time "the event is what it is, because the object is what it is; each object is in some sense ingredient throughout nature. The ingression of every electron into nature modifies to some extent the character of every event" (pp. 144, 145, 159). It is obviously difficult therefore, particularly if electrons are eternal, to regard objects as essentially inactive; so that this equivalence between passage and activity is not easy to comprehend.

4. A few remarks in conclusion on the distinctive standpoints of science and philosophy with regard to space and time may not be superfluous. Science regards these entities as essentially measured (or at least measurable) systems which together constitute the space-time manifold. This means that the results of measurement are fully as important as that which is measured, perhaps more important;

¹⁹ This seems to be supported by each object being ingredient—i.e., active, operative, influential—throughout nature (pp. 145, 159). A musical tune, again, is also an object.

in other words, the different time- and space-systems are as material to thought as time and space themselves. Philosophy however takes a somewhat profounder view; for it time and space are in their own nature more significant than the scientific systems; somewhat as the monetary system of his own country is of primary interest to a banker, while an economist is more concerned with currency as an element in universal exchange. And now that the space-time manifold has attained such prominence, it is well to remember that it is no mysterious entity additional to time and space themselves, as though it were something wholly different in its nature within which these disappear or dissolve. Any such view would be to repeat the error so often made in dealing with time and space by erecting them into independent realities. The manifold is but the coexistence or unity of space and time, which coexist within reality in their own characters, like nitrogen and oxygen in air, not compounded into a third wholly different substance like oxygen and hydrogen in water.

Regarded in this light, there is one subject of essential importance—the uniformity of time and space throughout the universe, as distinct, *i.e.*, from any uniformity of time and space systems. As to the latter, there can be no question; observers in different situations must employ separate though interrelated systems. We may some day obtain both a common language and a general currency; but it is impossible for a universal time and space system ever to be constructed and employed; the very conditions of physical reality forbid it. But this still leaves open the question of the uniformity of time and space; the latter, *e.g.*, has been described as bent or warped or condensed in the vicinity of matter. Are these and other similar statements metaphorical or literal? Mathematical devices or descriptions of reality? Dr. Whitehead, being naturally concerned with systems, leaves the subject in some obscurity, in spite of his repudiation of Einstein's own interpretation (p. 165). "What a being under the one set of circumstances means by space will be different from that meant by a being under the other set" (p. 168); so that English and Martian observers will obtain different results from any one Earth land survey. But what is it that thus determines local differences in circumstances? In the end all circumstances resolve themselves into events. "The concrete facts of nature are events; event-particles are the ultimate elements of the manifold" (pp. 167, 173). Why, then, the question becomes, are events for *A* different from events for *B*?²⁰ Martians employ space natural

²⁰ Or event-particles; but any truly final explanation must be in terms of the concrete events. It is assumed of course that *A* and *B* both have minds of one and the same general type, otherwise the basis of difference is not, in Dr. Whitehead's sense, natural.

to them—"Martio-centric space in which that planet is fixed. Thus the q -space for Mars is quite different from the p -space on earth" (pp. 175, 176). This however must not be taken to mean that the Martian *manifold* is necessarily different from ours, for space and time denote only the relative *systems*—"are merely ways of expressing certain truths about the relations between events" (p. 168). If then the manifold itself is uniform, what is the basis of the unavoidable differentiation among the systems? It is scarcely sufficient to fall back on the "creative advance of nature" (p. 178), unless we assume that this advance in itself necessitates a non-uniform manifold,²¹ but this of course begs the question. Nor again does uniformity of the manifold necessarily follow from that of the momentary spaces and timeless spaces of p. 194; for these may be no more than mathematical or methodological devices.

But difficulties on points of detail such as those I have mentioned are inevitable; even were they far more serious, still Dr. Whitehead's work constitutes a distinct advance in the discussion of ontology; and if it could be supplemented from the strictly philosophic standpoint, we should be much nearer a lasting and satisfactory realism. There appear to me to be two marked parallel tendencies in current philosophy—one towards absolutism, the other towards realism. But absolutism has for long been misrepresented and therefore misunderstood; it has been presented at once as too subjective and too abstract.²² I do not see anything which prevents realism from taking its place within a system of absolute idealism fuller and deeper than any yet conceived. *Vestigia nulla retrorsum*, some one will say; but then the absolute is not a cave. Even if it were, we are in it already.

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A BEHAVIORISTIC ACCOUNT OF THE SIGNIFICANT SYMBOL

THE statement I wish to present rests upon the following assumptions, which I can do no more than state: I assume, provisionally, the hypothesis of the physical sciences, that physical objects and the physical universe may be analyzed into a complex of physical corpuscles. I assume that the objects of immediate ex-

²¹ As distinct, *i.e.*, from the systems. There must be some distinction, otherwise we should have systems of measurement with nothing to measure; "a measure-system measures something inherent in nature" (p. 196).

²² "The Absolutism which comes in for rebuke at the hands of pluralist critics is a fiction of their own imagination." Radhakrishnan, *Reign of Religion in Philosophy*, p. 407.

perience exist in relationship to the biologic and social individuals whose environments they make up. This relationship involves on the one hand the selection through the sensitivities and reactions of the living forms of those elements that go to make up the object. On the other hand these objects affect the plants and animals, whose natures are responsible for them as objects, *e.g.*, food exists as an immediate experience in its relation to the individuals that eat it. There is no such thing as food apart from such individuals. The selection of the characters which go to make up food is a function of living individuals. The effect of this food upon the living individuals is what we call adaptation of the form to the environment or its opposite. Whatever may be said of a mechanical universe of ultimate physical particles, the lines that are drawn about objects in experience are drawn by the attitudes and conduct of individual living forms. Apart from such an experience involving both the form and its environment, such objects do not exist.

On the other hand these objects exist objectively, as they are in immediate experience. The relation of objects making up an environment to the plants and the animals in no sense renders these objects subjective. What are termed the natures of objects are in the objects, as are their so-called sensuous qualities, but these natures are not in the objects either as external or internal relations, they are of the very essence of the objects, and become relations only in the thought process. The so-called sensuous qualities exist also in the objects, but only in their relations to the sensitive organisms whose environments they form.

The causal effect of the living organisms on their environment in creating objects is as genuine as the effect of the environment upon the living organism. A digestive tract creates food as truly as the advance of a glacial cap wipes out some animals or selects others which can grow warm coats of hair. An animal's sensitiveness to a particular character in an object gives the object in its relation to the animal a peculiar nature. Where there is sensitiveness to two or more different characters of the object, answering to reactions that conflict and thus inhibit each other, the object is in so far analyzed. Thus the width of a stream would be isolated from the other characters of the stream through the inhibition of the animal's tendency to jump over it. In the immediate experience in which the animal organism and its environment are involved, these characters of the objects and the inhibited reactions that answer to them are there or exist, as characters, though as yet they have no significance nor are they located in minds or consciousnesses.

Among objects in the immediate experience of animals are the

different parts of their own organisms, which have different characters from those of other objects—especially hedonic characters, and those of stresses and excitements—but characters not referred to selves until selves arise in experience. They are only accidentally private, *i.e.*, necessarily confined to the experience of single individuals. If—after the fashion of the Siamese Twins—two organisms were so joined that the same organ were connected with the central nervous system of each, each would have the same painful or pleasurable object in experience. A toothache or a pleased palate are objects for a single individual for reasons that are not essentially different from those which make the flame of a match scratched in a room in which there is only one individual an object only for that individual. It is not the exclusion of an object from the experience in which others are involved which renders it subjective; it is rendered subjective by being referred by an individual to his self, when selves have arisen in the development of conduct. Exclusive experiences are peculiarly favorable for such reference, but characteristics of objects for every one may be so referred in mental processes.

Among objects that exist only for separate individuals are so-called images. They are *there*, but are not necessarily *located* in space. They do enter into the structure of things, as notably on the printed page, or in the hardness of a distant object; and in hallucinations they may be spatially located. They are dependent for their existence upon conditions in the organism—especially those of the central nervous system—as are other objects in experience such as mountains and chairs. When referred to the self they become memory images, or those of a creative imagination, but they are not mental or spiritual stuff.

Conduct is the sum of the reactions of living beings to their environments, especially to the objects which their relation to the environment has “cut out of it,” to use a Bergsonian phrase. Among these objects are certain which are of peculiar importance to which I wish to refer, *viz.*, other living forms which belong to the same group. The attitudes and early indications of actions of these forms are peculiarly important stimuli, and to extend a Wundtian term may be called “gestures.” These other living forms in the group to which the organism belongs may be called social objects and exist as such before selves come into existence. These gestures call out definite, and in all highly organized forms, partially predetermined reactions, such as those of sex, of parenthood, of hostility, and possibly others, such as the so-called herd instincts. In so far as these specialized reactions are present in the nature of individuals, they tend to arise whenever the appropriate stimu-

lus, or gesture calls them out. If an individual uses such a gesture, and he is affected by it as another individual is affected by it, he responds or tends to respond to his own social stimulus, as another individual would respond. A notable instance of this is in the song, or vocal gesture of birds. The vocal gesture is of peculiar importance because it reacts upon the individual who makes it in the same fashion that it reacts upon another, but this is also true in a less degree of those of one's own gestures that he can see or feel.

The self arises in conduct, when the individual becomes a social object in experience to himself. This takes place when the individual assumes the attitude or uses the gesture which another individual would use and responds to it himself, or tends so to respond. It is a development that arises gradually in the life of the infant and presumably arose gradually in the life of the race. It arises in the life of the infant through what is unfortunately called imitation, and finds its expression in the normal play life of young children. In the process the child gradually becomes a social being in his own experience, and he acts toward himself in a manner analogous to that in which he acts toward others. Especially he talks to himself as he talks to others and in keeping up this conversation in the inner forum constitutes the field which is called that of mind. Then those objects and experiences which belong to his own body, those images which belong to his own past, become part of this self.

In the behavior of forms lower than man, we find one individual indicating objects to other forms, though without what we term signification. The hen that peeks at the angleworm is directly though without intention indicating it to the chicks. The animal in a herd that senses danger, in moving away indicates to the other members of the herd the direction of safety and puts them in the attitude of sensing the same danger. The hunting dog points to the hidden bird. The lost lamb that bleats, and the child that cries each points himself out to his mother. All of these gestures, to the intelligent observer, are significant symbols, but they are none of them significant to the forms that make them.

In what does this significance consist in terms of a behavioristic psychology? A summary answer would be that the gesture not only actually brings the stimulus-object into the range of the reactions of other forms, but that the nature of the object is also indicated; especially do we imply in the term significance that the individual who points out indicates the nature to *himself*. But it is not enough that he should indicate this meaning—whatever meaning is—as it exists for himself alone, but that he should indicate that meaning as it exists for the other to whom he is pointing

it out. The widest use of the term implies that he indicates the meaning to any other individual to whom it might be pointed out in the same situation. In so far then as the individual takes the attitude of another toward himself, and in some sense arouses in himself the tendency to the action, which his conduct calls out in the other individual, he will have indicated to himself the meaning of the gesture. This implies a definition of meaning—that it is an indicated reaction which the object may call out. When we find that we have adjusted ourselves to a comprehensive set of reactions toward an object we feel that the meaning of the object is ours. But that the meaning may be ours, it is necessary that we should be able to regard ourselves as taking this attitude of adjustment to response. We must indicate to ourselves not only the object but also the readiness to respond in certain ways to the object, and this indication must be made in the attitude or rôle of the other individual to whom it is pointed out or to whom it may be pointed out. If this is not the case it has not that common property which is involved in significance. It is through the ability to be the other at the same time that he is himself that the symbol becomes significant. The common statement of this is that we have in mind, what we indicate to another that he shall do. In giving directions, we give the direction to ourselves at the same time that we give it to another. We assume also his attitude of response to our requests, as an individual to whom the direction has the same signification in his conduct that it has to ourselves.

But signification is not confined to the particular situation within which an indication is given. It acquires universal meaning. Even if the two are the only ones involved, the form in which it is given is universal—it would have the same meaning to any other who might find himself in the same position. How does this generalization arise? From the behavioristic standpoint it must take place through the individual generalizing himself in his attitude of the other. We are familiar enough with the undertaking, in social and moral instruction to children and to those who are not children. A child acquires the sense of property through taking what may be called the attitude of the generalized other. Those attitudes which all assume in given conditions and over against the same objects, become for him attitudes which every one assumes. In taking the rôle which is common to all, he finds himself speaking to himself and to others with the authority of the group. These attitudes become axiomatic. The generalization is simply the result of the identity of responses. Indeed it is only as he has in some sense amalgamated the attitudes of the different rôles in which he has addressed himself that he acquires the unity

of personality. The "me" that he addresses is constantly varied. It answers to the changing play of impulse, but the group solidarity, especially in its uniform restrictions, gives him the unity of universality. This I take to be the sole source of the universal. It quickly passes the bounds of the specific group. It is the *vox populi*, *vox dei*, the "voice of men and of angels." Education and varied experience refine out of it what is provincial, and leave "what is true for all men at all times." From the first, its form is universal, for differences of the different attitudes of others wear their peculiarities away. In the play period, however, before the child has reached that of competitive games—in which he seeks to pit his own acquired self against others—in the play period this process is not fully carried out and the child is as varied as his varying moods; but in the game he sees himself in terms of the group or the gang and speaks with a passion for rules and standards. Its social advantage and even necessity makes this approach to himself imperative. He must see himself as the whole group sees him. This again has passed under the head of passive imitation. But it is not in uniform attitudes that universality appears as a recognized factor in either inner or outer behavior. It is found rightly in thought and thought is the conversation of this generalized other with the self.

The significant symbol is then the gesture, the sign, the word which is addressed to the self when it is addressed to another individual, and is addressed to another, in form to all other individuals, when it is addressed to the self.

Signification has, as we have seen, two referenes, one to the thing indicated, and the other to the response, to the instance and to the meaning or idea. It denotes and connotes. When the symbol is used for the one, it is a name. When it is used for the other, it is a concept. But it neither denotes nor connotes except, when in form at least, denotation and connotation are addressed both to a self and to others, when it is in a universe of discourse that is oriented with reference to a self. If the gesture simply indicates the object to another, it has no meaning to the individual who makes it, nor does the response which the other individual carries out become a meaning to him, unless he assumes the attitude of having his attention directed by an individual to whom it has a meaning. Then he takes his own response to be the meaning of the indication. Through this sympathetic placing of themselves in each other's rôles, and finding thus in their own experiences the responses of the others, what would otherwise be an unintelligent gesture, acquires just the value which is connoted by signification, both in its specific application and in its universality.

It should be added that in so far as thought—that inner conversation in which objects as stimuli are both separated from and related to their responses—is identified with consciousness, that is in so far as consciousness is identified with awareness, it is the result of this development of the self in experience. The other prevalent signification of consciousness is found simply in the presence of objects in experience. With the eyes shut we can say we are no longer conscious of visual objects. If the condition of the nervous system or certain tracts in it, cancels the relation of individual and his environment, he may be said to lose consciousness or some portion of it; *i.e.*, some objects or all of them pass out of experience for this individual. Of peculiar interest is the disappearance of a painful object, *e.g.*, an aching tooth under a local anesthetic. A general anesthetic shuts out all objects.

As above indicated analysis takes place through the conflict of responses which isolates separate features of the object and both separates them from and relates them to their responses, *i.e.*, their meanings. The response becomes a meaning, when it is indicated by a generalized attitude both to the self and to others. Mind, which is a process within which this analysis and its indications take place, lies in a field of conduct between a specific individual and the environment, in which the individual is able, through the generalized attitude he assumes, to make use of symbolic gestures, *i.e.*, terms, which are significant to all including himself.

While the conflict of reactions takes place within the individual, the analysis takes place in the object. Mind is then a field that is not confined to the individual much less is located in a brain. Significance belongs to things in their relations to individuals. It does not lie in mental processes which are enclosed within individuals.

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BOOK REVIEWS

The Analysis of Mind. BERTRAND RUSSELL. London: George Allen and Unwin. New York: The Macmillan Co. 1921. Pp. 310.

The book deals with that conception of the nature of mind which is involved in regarding physical objects as constructs of appearances. Thus it is in effect the logical sequel to views expressed by the author in his Lowell Lectures, and in it he has given us what is the most complete and balanced statement to date of the results of his philosophic method.

Mr. Russell's central thesis is that all psychical phenomena are built up out of sensations and images, and nothing else. This involves

a departure from his own previous theory "that the essence of everything mental is a certain quite peculiar something called 'consciousness'," and more specifically a revision of his doctrine of knowledge by acquaintance. Moreover since the physical as well as the psychical is a construction of appearances, his most fundamental systematic problem is that of distinguishing between mind and matter. In lecture I (*Recent criticisms of "consciousness"*), and lecture VI (*Introspection*), he shows that this must not be thought of as a substantial dualism. His general position is a monism whose ideal is "that fundamental science . . . the true metaphysic, in which mind and matter alike are seen to be constructed out of a neutral stuff" (p. 287). This ultimate stuff, which presumably consists of the multiplicity of appearances, is the common subject-matter both of physics and psychology. But the latter science deals with it by means of causal laws which have two special characteristics. In the first place, all psychical phenomena are said to possess "subjectivity." To this term a very special meaning attaches, which may be made clear as follows. Every particular of the kind considered by physics may on the one hand be regarded as a member of a group constituting a thing, as explained in Mr. Russell's Lowell Lectures and elsewhere, as well as in the present work; on the other hand it may be a member of a group constituting a perspective, a group of which in turn make up a "biography." The most significant purely logical mark of a biography is that it possesses a linear time-order, that is, it is a group of entities which have direct time-relations (simultaneous with, before, after) with respect to any one of themselves, as opposed to the time order of the physical universe. The "local time" of the theory of relativity occurs in biographies. And it is such a classification, which is also called classification by "passive places," that Mr. Russell understands as the essence of subjectivity. But this is not a complete designation of the nature of psychical phenomena, for many such biographies will have nothing to do with mind. A photographic plate might have a biography in this sense. An additional determining factor is needed for the specification of mind, and this is provided by "mnemic causation." This means that the nature of our experience of any event is not wholly caused by the immediate, present occurrence of that event, but also by its past occurrences in our experience. "This characteristic is embodied in the saying 'the burnt child dreads the fire'. The burn may have left no visible traces, yet it modifies the reaction of the child in the presence of the fire" (p. 77). While Mr. Russell agrees that it is probable that such phenomena can be explained by regarding the results of experience as being embodied in modifications of the brain and nerves, he points out that this is a theory only, and prefers to

operate with the bare formulation of the observed facts. Thus "the two most essential characteristics of the causal laws which would naturally be called psychological are *subjectivity* and *mnemic causation*" (p. 307).

The bulk of the book is taken up with the detailed elaboration of the theory above outlined in terms in its application to various psychological and epistemological conceptions. A *perception* is the appearance of an object from a place where there is a brain. Such appearances undergo distortion owing to the intervening media of the organic structure, and also stand in the nexus of mnemic causation. *Sensations* are the non-mnemic core of perceptions, and are the elements common to both the mental and physical worlds. *Images* differ from sensations in that their causation is *wholly* mnemic, that is, they arise from past experience. *Belief*, which is "the central problem in the analysis of mind" (p. 231) is analyzed into content, which is a complex of images and sensations, and a specific feeling called believing, which is "presumably a complex sensation demanding analysis" (p. 251). In terms of belief are defined *memory*, *expectation*, and *assent*, the differences between them being not an affair of content, but arising out of the three kinds of belief-feeling which may attach to any complex of images. *Imagination* consists of images without belief. The study of belief also leads to a formal theory of *truth and falsehood*. *Emotions* and *will* are discussed in consonance with the general position of the book, emotions being regarded as serial patterns of sensations and images. *Desire* is treated as being a sort of analogue to force in physics. *Instinct* and *habit* are also considered. The *meaning of words*, and also that of images is explained largely with reference to mnemic causation. In dealing with *general ideas* we are given a very valuable analysis of vagueness and the generic image. The discussion of *introspection* is notable for its penetration and lucidity. In the final lecture there is presented a theory of *consciousness*. An interesting point is the philosophical assimilation of the psycho-analytic method. At the close of the book is an analytic table of contents which is remarkable only for its lack of value.

The whole work, which displays its author's constructive insight and analytic power to the best advantage, is of great methodological interest as a thoroughgoing reconstitution of structural psychology. Mr. Russell rejects behaviorism as an ultimate account of the nature of mind, because it is based on a faulty philosophy of physics, which fails to regard the universe as fundamentally a multiplicity of particulars. Perhaps the weakest spot is the treatment of belief-feelings, which are somewhat dogmatically said to consist of complex sensations, although no attempt is made to analyze these

complexes. This, however, is at the worst an error of omission, and throughout we find an accuracy in defining and a directness in attacking genuine problems not usual in work of this character. The entire discussion will be welcomed, not only as the latest authoritative exposition of a point of view which has become very influential, but also as a highly significant contribution to modern philosophy.

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JOURNALS AND NEW BOOKS

THE AMERICAN JOURNAL OF PSYCHOLOGY, July, 1921.
An Experimental Investigation of the Positive After-Image in Audition (pp. 305-325): HOMER GUY BISHOP.—There is no positive after image of tone similar to the nature of the visual after-image. *The Influence of Color upon Mental and Motor Efficiency* (pp. 326-356): SIDNEY L. PRESSEY.—Experimental evidence suggests that there is a slowing up of mental work under dim light, but hues aside from brightness show no effect. Bibliography. *The Nature of the Affective Judgment in the Method of Paired Comparisons* (pp. 357-369): M. YOKOYAMA.—The method of paired comparisons can no longer be considered as a typical laboratory setting for the study of affections. *A Study in Logical Memory* (pp. 370-403): SARAH D. MACKAY AUSTIN.—After from two to four weeks repetitions of both logical and nonsense material proved of greater value than cumulative repetitions. *In Aid of Introspection* (pp. 404-414): HORACE BIDWELL ENGLISH.—Introspection is approved as a psychological method. Several rules are given. "Any one with a good memory and a sincere desire to improve can learn to introspect in a way which will be of distinct scientific usefulness." *Minor Studies from the Psychological Laboratory of Cornell University. An Experimental Study of Cutaneous Imagery* (pp. 415-420): CATHERINE BRADDOCK.—Cutaneous images come up rarely if ever. *The Integration of Punctiform Cold and Pressure* (pp. 421-424): S. TUNG.—The simultaneous stimulation of pressure and cold spots was felt as wet-cold. *The Hering Color-Blindness Apparatus and the Normal Equation* (pp. 425-428): M. WINFIELD AND C. STRONG.—Variation from the normality in color combination approvals is insufficient evidence for normality and abnormality. *The After-Effect of Seen Movement When the Whole Visual Field is filled by a Moving Stimulus* (pp. 429-441): WELLINGTON A. THALMAN.—The after-effect is observed when the whole visual field is filled by an objective moving stimulus the chief conditioning factor of which is duration. *Book Reviews*: J. B. Pratt, *The religious*

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NOTES AND NEWS

A meeting of the Aristotelian Society was held in London on January 16, Dr. F. C. S. Schiller, President, in the chair. A paper on "Plato's Theory of *εἰκασία*" was presented by Mr. H. J. Paton. In Plato's account of the Line and the Cave in the *Republic* he distinguishes two sub-divisions of opinion (*εἰκασία* or intuition and *πίστις* or belief) and two sub-divisions of knowledge (*διάνοια* or mathematical reasoning and *νόησις* or philosophical reasoning). This must be understood as implying a difference of objects in each of the four sub-divisions, just as the objects of opinion and knowledge are different—the changing individuals as opposed to the unchanging universals. The parallelism or analogy between the objects of the two main divisions and those of the sub-divisions is meant to be taken seriously throughout. In particular the objects of the *εἰκασία* or intuition are the many appearances, whether given in what we call sense or memory or imagination, from which we pass to the objects of *πίστις* or belief—the solid bodies of the ordinary consciousness and of science, things relatively permanent and relatively intelligible in comparison with their many appearances,

although changing and unintelligible in comparison with the really permanent and really intelligible εἶδη or universals. It is a complete error to regard εἰκασία and its objects as of no metaphysical importance, and an understanding of the nature of this section is necessary if we are to grasp Plato's general theory of knowledge. Even Plato's theory that art must be classified under this first cognitive activity of the spirit is in its essence sound in spite of the fact that some of the conclusions which he derived from it were mistaken.

The annual meeting of the Western Division of the American Philosophical Association this year will be held at the University of Nebraska, Lincoln, Nebraska, on Friday and Saturday, April 14 and 15. As usual, members will have opportunity to present papers—not exceeding twenty minutes in length—on any topics of their selection. It is proposed however that one afternoon session be devoted to *Logical Aspects of Critical Realism* with Professor A. W. Moore as leader of the discussion. All who feel especially interested in the recent volume, *Essays in Critical Realism*, or any of its problems, are invited to participate. It has been suggested that the papers of one other session relate to the problem of *The Nature of the Self*, the topic being taken broadly as covering methodological aspects of the *Mind-Body Problem*, especially *Interactionism* as it has recently been presented, and the relations of *Mechanism and Teleology* as pertaining to the nature of the self. Should the papers offered warrant doing so, this suggestion will be followed in arranging the program. A list of references on this subject may be obtained from the Secretary, Professor G. A. Tawney, University of Cincinnati, Cincinnati, Ohio. It is essential that the Secretary be notified of the titles at an early date. Abstracts of all papers to be read should be in his hands not later than April 7, and fifteen to twenty copies of each abstract would be highly desirable for distribution.

A group of scientific men and women from Russia now living in the United States have organized themselves into the "Russian Academic Group." Their first annual meeting was held on January 12. The purpose of the organization is threefold: (1) to study the social, economic and industrial problems involved in the development of Russia; (2) to bring about a closer contact between the scientific and educational institutions of America and Russia; and (3) to help in the reconstruction of the academic life of the Russian universities and to bring relief to their faculties and students.

THE JOURNAL OF PHILOSOPHY

THE METAPHYSICAL STATUS OF SENSATIONS

“When the eye and the appropriate object meet together and give birth to whiteness and the sensation of white, which could not have been given by either of them going to any other, then, while the sight is flowing from the eye, whiteness proceeds from the object which combines in producing the color; and so the eye is fulfilled with sight, and sees, and becomes, not sight, but a seeing eye; and the object which combines in forming the color is fulfilled with whiteness, and becomes not whiteness but white, whether wood or stone or whatever the object may be which happens to be colored white. And this is true of all sensations, hard, warm, and the like, which are similarly to be regarded, as I was saying before, not as having any absolute existence, but as being all of them generated by motion in their intercourse with one another, according to their kinds.” (Plato: *Theætetus*, pp. 156-157, Jowett's translation.)

IF one ever needs excuse for quoting Plato, it would do in this case to plead that the doctrine contained in the passage is brilliant, thorough, and sound. The history of philosophy, in its meandering course, has brought forth no improvement upon the statement put into the mouth of Socrates by his great pupil. One need not agree with all the positions of Plato in even the dialogue from which the above passage was taken in order to enter fully into the proffered analysis of the metaphysical status of sensations. Socrates is making no pretense of originating a new doctrine: he is expounding that of Protagoras. Indeed he seems to accept as true everything which Protagoras says about sensation, except that it is knowledge. This doctrine of sensation, however sound, becomes, when coupled with the supposition that sensations are cognitive of the world beyond, involved in grave difficulties; and the followers of Protagoras through the centuries are responsible for all the copy-theories of sensation which have so led philosophy astray. But in this present paper there will be no occasion to discuss knowledge; rather the effort will be made simply to comment upon and compare with less satisfactory modern analyses that doctrine of the nature of sensations which Protagoras formulated, Socrates accepted, and Plato so beautifully put into words. And if the points commented upon seem trivial and commonplace, the writer might reply that he wishes they were so well understood and so widely taken for granted that

further restatement would be unnecessary. As so often is the case, metaphysics is needed only because there is so much bad metaphysics.

Sensation is a natural event which takes place in the world under certain ascertainable conditions. We have good reason to believe that objects existed long before they were perceived by even the first organisms endowed with organs sensitive to stimuli from those objects; and we have good reason to believe that a catastrophic destruction of all organisms would leave those objects in undisturbed existence. Sensation is an event which happens in its setting, but does not produce nor control that setting. The setting consists, for the purposes of analysis, of three significant elements or aspects. First, there is the object such as a stone, a cloud, a bon-bon, or an open fire on a wintry day. Secondly, there is the animal organism, with its end-organs of various sorts, end-organs which might under different circumstances have become other than they are but happen to be as they are, end-organs such as the eye, the ear, and the various special structures in the skin. Thirdly, there is the medium of communication between object and end-organ, the physical contact and pressure of the stone against the organ of touch, the vibrating ether between the cloud and the eye, the physical contact and chemical change which ensues when the bon-bon is dissolved upon the tongue, or the air-waves between the fire and the organ of heat. We know more about the structure of the end-organs than did Plato, and also about the mediums by which objects affect the end-organs. But Socrates did not need to know the details of all the species of processes involved in sense-experience, in order to formulate correctly the definition of the subsuming genus; and he allows adequately for the growth of scientific knowledge when he says that the various kinds of sensations are "generated by motion in their intercourse with one another according to their kinds." Perhaps no loss of accuracy in discussing sensations will result if vision is selected for special treatment; for similar things could be said about all other kinds of sensations.

The absence of one or more of the three elements of the setting in which sensations occur will of course make sensations impossible.¹ A dazzling sun may shine with unparalleled splendor for countless ages; but there will be nothing seen unless the electro-magnetic vibrations starting out from it chance to strike upon the sensitive retina of some physiological organism. A strong eye, well con-

¹ That sensations may arise under other conditions can not of course be dogmatically denied. Yet the only sensations of which we know anything are generated in the way here discussed; and we have no reason for believing in any others.

structed in all its parts and properly related to a healthy organism, may search the uttermost reaches of space; but there will be nothing seen unless there is some object within the radius of its range and some unimpeded physical force to stimulate the eye. In a world where no interactions took place between the various things of which that world might be composed, there would be no sensations; and even in a world where the requisite interactions take place, there must yet be properly formed end-organs before those influences produce sensations. If the nature of the object or the nature of the medium of communication were changed, it might well be that the end-organ would have to go through compensating changes before sensations would once more occur; and any change in an end-organ beyond a very slight one would probably forever put a stop to sensations through it, unless the other elements of the setting were altered or those elements chanced to have other activities formerly unconnected with sensation-processes and yet suited thereto in connection with the altered end-organ.

The part of Plato's doctrine of sensations which is important for metaphysics and logic remains to be noted. There is no suggestion in Plato that sensations are a new sort of entity which half conceals and half discloses the world which the organism faces—not that he specifically denies that such is the case, but that such a consideration is irrelevant to the subject-matter under examination. The followers of Protagoras who regarded sensations as knowledge might well become involved in such a distressing problem. But not Plato. For him sensations are not cognitive, and there is no need of determining whether the sensation is a "copy" of anything else. A sensation like an explosion of gunpowder is an event, with natural causes and effects; but it no more mirrors the conditions of its occurrence than an explosion mirrors the chemicals and the spark which set those chemicals off. The sensation-process is a complex process, in which, by virtue of the total situation established by object, medium, and end-organ, the object and the end-organ are temporarily of a different nature than before the situation was established. That is, the eye becomes a seeing eye, and the object becomes a white object. There would be no objection to calling the white object or the white alone by such terms as *idea*, *impression*, or *psychic state*, provided that no improper inferences were drawn from that term. Neither the white object nor the white is any of those things, however, if by those terms is meant a separate and distinct existence. The object seen is the object which was really there before it was seen, even though it was not then white and did not stand in the situation in which it later came to stand. There seems to be no warrant for

calling objects white unless they are seen; but the white object seen is the same object which the eye for some reason singles out from the total environment. As Plato puts it, the eye becomes a seeing eye and the object becomes a white object; and Plato would correctly add that no further entity or existence was involved in the process. The same eye may be the organ of many different sensations in which the same object is seen in many different shapes and colors; for the same object seen may be seen by the same eye in many different positions and under many different conditions. And since the nature of a sensation depends upon the total situation of object, medium, and end-organ, the nature of successive sensations will vary. No sensation "grasps" the whole nature of the object. But what is seen is real in so far forth under the circumstances, no matter whether it would be unreal under other circumstances.²

There is a certain sense in which men stand in the egocentric predicament, *viz.*, that they can not have sensations of objects with which they are not brought in contact according to the conditions of object, medium, and end-organ. But since knowledge is not a matter of sensations, taken singly or in complexes, there is no egocentric predicament about the cognitive experience. Also since in sensation-processes they come into contact with the natural, the objective, the real world, there is no egocentric predicament about the metaphysical status of sensations. The world as sensed is *ipso facto* a different world than the world as not sensed, just as the end-organ in action is different than the end-organ not in action. But it is important to determine what the difference is from an examination of what goes on, and not to settle such questions by a definition of what a metaphysical difference might be. Certainly as we observe the facts, there is no problem of the existence of an external world. There may well be problems as to the nature and the qualities of the seen objects in some of their unseen relationships which are not directly observed. We may well ask such questions as the following:

² Lest there be misunderstanding as to the meaning of *real* in the above paragraph, it might be noted that the term refers simply to what is "there," *i.e.*, to what exists at any moment. No supposition of always and forever enduring is implied. Recently Mr. C. A. Strong wrote: "If we say that data are real, we are forced to say that physical things are not real, while, if we say that physical things are real—as I think we must—we are forced to conclude that data, as such, are not real." (*Essays in Critical Realism*, p. 225.) But the bewildering dilemma clears up when Mr. Strong explains at the end of his paragraph, in a phrase which seems to have been added at the last moment to meet the objections of one of his co-authors, that *real* means "continuously existent." Such usage, if unusual, has ample historical precedent, but is not the meaning of the word in this paper.

What color would the object be in a mist? What would the object look like under a microscope? Could we see the object through a certain intervening substance? Could we see the object from a certain distance? What is the chemical constitution of the object? At what rate do the atoms of which it is composed vibrate? *Etc. etc.* But we could not legitimately ask whether there is "really" an object there; for it is given as "there." We could not legitimately ask whether it is "really" white; for if we know what the question means, we will know that in one sense it is white and in another sense it is not, and if the question means neither of these things, there is no such thing as being "really" white. We never have the task of getting from the realm of "psychic states" into the world of physical existences, but simply the task of getting from the world as it is partially perceived to the world as it is more largely inferred to be.³ The problem of knowledge is the practical one of how to go from incomplete information to more complete understanding. That problem can not be said to involve a dualism, in any of the ordinary or historic senses of that word; it involves only a dualism between the less and the more, both of which are contained in the same total system of reality. We do not infer what things are like on the basis of "psychic states" or "ideas wholly in the mind"; but we infer what things are like in their entirety from those of their qualities and relations which we do directly perceive. Objects do not cease to be objects in becoming seen any more than they cease to be objects in becoming eaten. That, I take it, is what Plato meant when he said that the object "becomes not whiteness but white." At least, whether Plato meant that or not, it can be said that in vision objects do not themselves become, and do not produce as a sort of by-product, what are usually called "psychic states," but become seen objects. And sensation presents us with no difficulty except that of discovering from incomplete presentation of the world we confront certain other

³ Two statements in the recent *Essays in Critical Realism* deserve comment here. Mr. Strong said: "The world as sense-perception presents it and the world as it is by no means coincide" (227). In one sense this is quite true; for the object seen is not at all times and apart from perception exactly what it is seen to be in vision. But in another sense the statement is false; for the world as sense-perception presents it is a part of the world as it is, though a small part. Mr. A. K. Rogers said in the same volume: "The world of science is distinctly not the world of immediate perception" (151). This is true of physics and astronomy to a large extent; for those sciences are interested in certain aspects of the world not presented in sensations. But it is not true of optics, acoustics, and such sciences. And it is entirely false if it is meant that there is any metaphysical difference between the world of science and the world of immediate perception.

as yet unobserved and perhaps permanently unobservable items in which we may happen to be interested. Metaphysics and epistemology can not properly be concerned with an alleged hiatus between two different sorts of existences, but with the distinction between and the differences in the things as seen and the same things as not seen, all of which exist in one continuous realm of being. Men come into limited contact with things through sensations and need to know lots of facts about their world which can only be discovered indirectly, on the basis of analogy, of inference, of hypothesis and experimentation. In other words, in addition to the knowledge which may be directly derived from such sensations as those of vision, we must have recourse to such well-guided reasonings as are furnished to us by such sciences as optics, physics, and chemistry.

II

The view of sensations thus outlined, whether or not it is to be found in Plato, is a realism or naturalism. But it differs from, though it has certain sympathies with, two commonly accepted theories, by contrast with which its significance would perhaps be more obvious. The first of these is behaviorism; the second is a dualistic realism represented by the modern tradition which comes from Locke and Kant, and which has recently been restated, in an effort to minimize the dualism, by the "critical realists." Though no effort will here be made to review those alternative views of sensation in any detail, the contrasts may be helpful.⁴

The position defended in this paper is in one sense of the word itself a behaviorism. We do not get sensations by passively waiting like the wax for the imprint of the seal. We would not call the images in a mirror sensations (that is, the sensations possessed by the mirror). An eye, however complete in all its parts, would probably not see objects, if it were detached from the organism of which it is an integral part. Unless there is reaction by as well as action upon the eye, vision does not occur. In other words, the eye must be the end-organ of some physiological unit of response, since it is probably safe to affirm that the eye taken by itself could not respond at all. Sensations, as the term has been used in this paper, are certain qualities such as blue and red, sweet and sour, hot and cold; but these qualities appear only in connection with a certain process

⁴ A paper to follow this paper will examine the claim of the "critical realists" to have overcome the difficulties of the traditional epistemological dualism through their new doctrine of the datum as a logical essence. But for any such examination, a preliminary constructive statement seemed advisable of the point of view from which criticism would be brought.

which involves object, medium, and end-organ, and the activity of all those elements is jointly necessary. None of the qualities which are revealed by the process can be taken to invalidate the process, to throw doubt upon the reality of the fact that there has been such a process, to deny the reality of the conditions under which the process takes place. The description of the sensation-processes from the standpoint of the organism is what behaviorism has to tell us about sensation, and is accepted as valid and convincing by the writer of this paper.

None the less the standpoint of this paper is opposed to much contemporary behaviorism. The chief reason why behaviorism has not been even more widely and unanimously adopted in America than has been the case, and why the present writer finds it partly unacceptable, is that behaviorists have often denied the reality of obvious facts in the interests of the simplicity of their theories. When behaviorism arose shortly after 1890, largely as the result of the impetus given to psychological studies by William James, many philosophers were found describing the mind as a mere series of the sense-qualities which the processes of sensation bring into existence. It was quite natural therefore that a reaction from this incomplete description should take place, and that not simply the mind should be described in terms of the processes of sensation and the like, but the very existence of the sense-qualities should be neglected and in more extreme cases denied.⁵ At least, whether natural or not, such did take place. Preoccupied with an analysis of the actions of the nervous system, behaviorists had nothing to say about the qualities which the objects have in sensation. Called to account for this neglect, they feared that they were being summoned once more to study merely these qualities; and knowing to their own satisfaction that what they had discovered about the mind could never be stated in any mere list of such qualities, however complete, they asserted that the mind was activity, not quality at all. Furthermore, fearing a renewal of the epistemological futilities of which modern philosophy has given such frequent instances, they were prompted to deny the existence of "psychic states"; and since their adversaries assured them that the qualities revealed in sensation were "psychic states," they denied the very existence of the qualities altogether.

⁵ Mr. J. B. Watson only harms his own cause by his impossible identification of colors or other qualities of an object with a physiological process. *E.g.*, he recently quoted Dunlap with approval to the effect that "the so-called visual image is only an associated eye muscle strain (muscular 'sensation')." Cf. *The Dial*, Vol. LXXII., No. 1, p. 101, Jan., 1922. This is only a new form of the traditional materialistic fallacy.

To a certain extent the dispute has been merely verbal. If any one chooses to call the sense-qualities which appear in the course of the sensation-processes by the name of *mind*, there should be no objection—though care would have to be exercised to keep from various of the traditional errors which have accompanied that terminological practise during the last three centuries. Similarly if any one chooses to call the activities of the organism in sensation and the like by the name of mind, again there should be no objection. Though we can discover no reason why certain qualities should appear exclusively in connection with certain processes, yet such seems to be the fact. If either thing were singled out as that in terms of which alone mind is to be defined, the behaviorist has chosen the better element. For the sense-quality is the quality of the object: it is neither within the body nor within the confines of a mental realm distinguished from the physical world. And the error of the behaviorist is decidedly less disastrous than that of the upholders of the "psychic states"; for their error is the enthusiastic one of youth in overstating a new discovery, and involves no distortion of reality in so far as their positive, if not their negative, arguments are concerned.

Yet the issue has often gone further than a verbal dispute. The behaviorists, assured from their own studies that the thing they called mind was a certain set of activities of the physiological organism, and assured by a long and important tradition that sense-qualities did not exist outside the mind, had to deny that there were any sense-qualities at all. Mind for them was not a receptacle: it was not a place in which anything could be located. Of course their denial of sense-qualities was an error. But the trap which led them into the error was their acceptance of the supposition that sense-qualities are "psychic states." If they erred, it was due to their trusting the word of those philosophers who, in Humian fashion, treated the mind as a series of states of consciousness and denied the objectivity of sense-qualities. They are not to be much reproached for their error; for the premise which they furnished from their own experimental work was true, whereas that supplied by their fellow-philosophers, if true at all, was true only in a limited and unusual sense of the words. Those who are worried over the materialistic tendency of behaviorism have only themselves to blame; the error of behaviorism can be corrected only upon the supposition of the objectivity of sense-qualities.

The time has come to locate the error of behaviorism more fairly. The denial of the existence of facts which every man perceives every day of his life is preposterous. The existence of sense-qualities

does not have to be proved, because it is given as an immediate fact of experience. Similarly the existence of the activities of the nervous system does not need to be proved any further than behaviorists have done. What we need is to learn what various people mean by terms such as mind, and then state the well-proved conclusions in terms the meaning of which may be clear to all. No one probably would question that object, medium, and end-organ are all essential to that sort of activity of the physiological organism which we may then agree to call the process of sensation. Since mind is usually contrasted with object, we would do better not to call by the name of mind the sense-quality which the object assumes during and as a result of the process of sensation; for the sense-quality is a quality of the object. Avoiding thus the term mind for the mere existence of sense-qualities, we should recognize none the less their existence. That sense-qualities are perceived and living processes are carried on by the same organisms should not blind us to both sets of facts. The behaviorists have neglected or even denied the former; their opponents have neglected and nearly always denied the latter, and then have drawn impossible conclusions from what they have mistakenly denied as well as from what they have truly affirmed. It is theoretically possible that some other cause than the sensation-process might give rise to sense-qualities, in which case no one surely would wish to speak of a mind as present. But it is actually the case that there are a number of biological and physiological processes which seem to go on without any sensations, any consciousness, any prevision of the future; and yet even in these processes we feel that we have something akin to what we mean by mind. Thus, though it is not the purpose of this paper to define mind, it can at least be said that the term seems to be best used for those of the living processes which have assumed a certain quality and a certain form.⁶

⁶ A word of warning to the critics of a revised behaviorism may be timely here. Those who treat the mind as a matter of activity or relationships are usually called materialists. But that characterization is not always correct. It would be correct if the relations were altogether spatial, if the activity were that of gross motion such as waving arms and legs about in space. But usually the relationships and activity referred to are ideal, they can be described only in terms of meaning, anticipation of the future, inference, judgment. Mr. Sellars remarked that knowledge is not "*a real relation between the knower and the known.*" (*Essays in Critical Realism*, p. 206.) I have not been able to puzzle out what he is intending to say. But his words would seem to mean either that knowledge did not exist or that the only *real relations* were spatial and material. I do not wish to be unfair. Yet I can not help but think that he tends to equate reality and matter, and to be by implication more materialistic than many behaviorists.

III

The opponents of behaviorism have almost unanimously treated sensations as "psychic states" existing in the mind and having no objective status. In fact this treatment has become so customary that it is often taken as an incontrovertible axiom which needs no proof. Each consciousness is then cut off from the rest of the world by an absolute break. And the world of nature, the objective world, is not known directly.⁷

The proofs for the subjectivity of sensations are mostly indirect, i.e., they consist in showing that sensations could not be objective. There are three such proofs which have frequently been offered from Locke to the "critical realists," and there is an implicit principle or metaphysical axiom usually assumed. These must be reviewed before the thesis of this paper can be taken as acceptable.

The arguments can be briefly summed up: (1) that different people looking at the same object have different sensations, and the sensations are therefore not really in the object but only imaginatively projected there; (2) that objects seem to have contradictory qualities and hence the qualities must be, not in the object, but in the mind; (3) that the qualities we discover are different from what we know on other grounds to be the nature of the objects and hence can not be in the objects at all.⁸ Now all these arguments are good as a refutation of "naïve realism" which supposes objects to be at all times just what they are seen at any one moment to be—though it may be doubted if the most naïve man-in-the-street ever held such a position. But none of them militates against the argument for the objectivity of sensations as set forth in this paper. (1) Different people looking at the same object of course have different sensations, which proves that the sense-quality is not in the object taken alone and absolutely, but which does not prove that the object may not have the various different qualities relatively to the different situations in which it stands to different organisms. Relativity is not subjectivity; and in these days of relativity, when even physicists talk in such terms, the old thoughtless identification of the relative and the subjective requires revision. If sensations are relative to medium and end-organ as well as to object, the con-

⁷ E.g., in *Essays in Critical Realism*, it is said that psychology deals with "subjective data" (31), that the sphere of the psychologist is "the psychical as such" (208), that a sensation, apart from its reference, is but "a pure state of our sensibility" (234), that "perception is not direct" (103), etc. Cf. also pp. 11, 28, 164, 192, 197, 217, *et passim*.

⁸ For the most recent statement of these arguments in compact form, consult *Essays in Critical Realism*, pp. 8, 15, 133, 224, 226, etc.

ditions of observation would assist in determining what quality would be seen. Under identically the same circumstances the object has identically the same quality. (2) The contradictory qualities, being also a matter of diverse points of view, signify nothing in the way of subjectivity. For the contradictory qualities are not in the object taken alone. The trouble here seems to arise from considering qualities as distinct and separate entities, like a lot of marbles which small boys carry around in their pockets. The sense-qualities of objects are relative to the point of view. And unless it is contradictory to suppose that there is more than one point of view in the universe, it is hard to see why it is contradictory to suppose an object to have successively to the same organism or simultaneously to different organisms a number of different qualities. (3) The fact referred to in the third argument is not a point against the theory of this paper, but part of the position defended. But the inference from that fact betrays a *non sequitur*. Because an object does not have eternally and unchangeably a certain quality observed in sensation, is no reason why it may not have that quality in case of being related in a certain way to a certain perceiving organism. It is a long jump from the discovery that the qualities observed in sensation are not the qualities which the object has apart from sensation, to the conclusion that the qualities are not qualities of the object at all but "psychic states" in the mind. Before such a conclusion could be defended, one would have to find such a "mind" as could contain qualities, which kind of a "mind" is not revealed by experience; and even then, one would need some experimental evidence for the location of qualities there instead of somewhere else. No one has ever successfully essayed this task. Rather such a supposition is defined as an axiom and accepted as authentic before experience is examined, and experience is then made to fit into this scheme at any cost.

In addition to these arguments which are restated in various forms, there is an alleged metaphysical principle which is supposed to prove the subjectivity of sensations. Instead of going to experience to find out whether we can really see and touch objects, the advocates of subjectivism adduce an *a priori* proof against such direct contact between observer and object.⁹ Mind and matter are so regarded that contact between them is deemed impossible.

⁹ E.g., Mr. R. W. Sellars said that the claim to have the object immediately present is "impossible," and his reason is that "it would involve the leaping of spatial and temporal barriers in an unnatural fashion" (*Essays in Critical Realism*, p. 200). The quite sufficient answer to Mr. Sellars and all the other critical realists who reject the contact of observer with object is contained in the wise words of Mr. Santayana in their own volume: "The standard of naturalness is nature itself" (p. 167).

The trouble here seems to be with the conception of cause. The assumption seems to have been made that one thing can not cause another thing unless we can understand *how* the act of causation takes place. But causation, however natural a matter, is not a logical procedure. A person who looked at the greenish-yellow gas called ehlorin with its disagreeable odor and poisonous effect upon the lungs and then looked at the whitish metal ealled sodium which discolours so quickly as it oxidizes when exposed to the air, might never suspect that those two substances, combined in certain proportions, would give another substance indispensable to living organisms and delicious for the seasoning of food. We can discover certain facts which we can not account for; yet metaphysies should not be regarded as a process of accounting for the universe but as a statement in general terms of what the universe happens to be. Similarly we may be unable to explain why certain kinds of matter, organized in a certain way, make living beings and end-organs and nervous systems; and we may be unable to explain why under certain circumstances these living beings can perceive objects. We are entitled to seek explanation of these facts in the sense that we may search for the detailed analysis of the processes involved, but not in the sense that we may formulate a principle which will account for things being as they are instead of otherwise. However unrelated to logical processes they may be, natural processes are none the less real, *i.e.*, take place; they do not wait for the logician to justify their occurrence. Causation is not anything to be explained *en masse*, but to be accepted and to be used as an explanation of what happens to and around us. Nature is more resourceful than the mind of a rationalist. Antecedent intelligibility is not a measure of natural possibility. What is, is possible. If we *do* perceive objects, then we *can*. Metaphysicians should start with nature, not with axioms; and their principles should be generalizations from the facts, not regulations by which they, like traffic policemen for the universe, endeavor to determine the directions in which things must go.

Doubtless many advocates of the existence of "psychic states" would reject the false metaphysical axiom discussed in the preceding paragraph. But if they carry out that rejection and eliminate its implications from all their theories, what antecedent likelihood is there that objects have not "really" the qualities which they are found in experience to have, and that we do not, in spite of every indication, "really" come into immediate contact with objects? Thus the way is opened for a return to a naturalism which takes the universe at face-value, gives credit to whatever it finds

and seeks for as much more as it can discover, and recognizes the setting in which living, perceiving, and thinking go on. Naturalism in this sense is far from materialism;¹⁰ for it regards the material world as the "natural basis" which finds its "ideal fulfilment" in the achievement of the goods which the structure of reality makes possible.¹¹ And thus from the slime of the sea-bed may arise beings who sing songs, build cathedrals, erect shrines to the saints, and dream of the kingdom of God. But the full meaning of naturalism is too much to attempt to define in a closing paragraph. It is perhaps enough if something has been said to reinforce Plato's contention that in vision the eye becomes a seeing eye, and the object becomes a white object.

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TRUTH AS CORRESPONDENCE: A RE-DEFINITION

THE purpose of this article is to show that by an accurate objective definition of the concepts involved it is possible to define truth in terms of correspondence, and at the same time avoid the well-known dialectical difficulties of the theory of error. Many attempts along this line have been made, but they have proved abortive. The advocates of what Joachim calls the coherence theory have found them altogether too easy to puncture. Granting that a true statement is one that corresponds with facts, they say, how are we to deal with false statements? We can not claim that they correspond to nothing at all, for this would imply that they were meaningless, which is not the case. And we can not say that they correspond with the wrong facts, for how can we determine their legitimate reference? In spite of the seeming finality of such objections, the correspondence theory of truth still survives. And it survives because of its obvious scientific common sense. But to a really striking degree epistemology has failed to put it on a sound logical basis. Propositions, assumptions, and other strange and doubtful entities have been invented to mediate between judgment and reality, and they are all conspicuously futile.

The correct solution is not by means of any of these ingenuities. It is found by taking an objective point of view in regard to the knowledge situation, and the factors entering into it. Our funda-

¹⁰ The word naturalism has not in this paper at all the same meaning as, for example, in Professor Perry's *Present Philosophical Tendencies*.

¹¹ These phrases are borrowed from Santayana's *Life of Reason*.

mental assumption is that knowledge is a function of reality. And our problem is so to define this relationship as to avoid the difficulties so often pointed out in connection with other correspondence theories of truth.

To begin with a study of the terms of the relation, what are we to understand by knowledge? Objectively considered, we may take knowledge to consist of speech-reactions. That is to say, it is a particular type of behavior. At first sight this may appear very paradoxical, but only because philosophy has paid little attention to the point. For it is by no means repugnant to the common sense of man. Humanity has inevitably perceived the necessity of inventing adequate means for keeping permanent records of speech-reactions. A page of writing is just as much a record of reactions as is the tracery on the smoked cylinder by which the subject of a psychological experiment shows his responses to the flashing of lights, the tones of bells or other stimuli. But the writing is an exceedingly complex and ingenious record of highly complex responses, whereas the tracery on the smoked surface is a relatively simple, two-dimensional affair. Thus the type of behavior known as language has evidently been given very great weight by the common consent of man, and the difficulty of regarding knowledge as language is sensibly diminished.

There are, however, two objections, one systematic, the other psychological, that must be met before we can proceed. In the first place it may be said that we are defining knowledge in terms of something that is not knowledge, and that this involves a reflexive fallacy. For if we say that all knowledge is speech, it may seem that we are making one of those assertions about all propositions that are forbidden by the Theory of Types. But this is not a case of defining one entity in terms of another. We do not have knowledge on the one hand and speech on the other. From the objective point of view we have nothing but speech. The whole material of logic itself is nothing but speech-reactions.

But, in the second place, it may be said that we are arguing far in advance of the known facts. It is by no manner of means established that all cognitive processes are essentially language-processes. This is true enough, but there is no lack of negative evidence in support of our contention. Within recent years extensive attempts have been made both in this country and in Europe to demonstrate the existence of so-called imageless thought. The fate of this research is quite instructive. In laboratories of marked sensationalist tendency, imageless thought was never discovered, while in laboratories of an anti-sensationalist turn, it was. Such

an outcome can hardly fail to cast serious reflections on the whole method of introspective psychology. And specifically, it is relevant to our present discussion in that it suggests the impossibility of dealing with cognition in terms of impressions. Knowledge would seem to be an affair of reactions. And the only kind of behavior that can well be regarded as knowledge is speech. Of course when we come to the positive side of the question, and try to show that in every case of cognition a speech reaction is present, the difficulties are immense. Oftentimes the responses will be exceedingly subtle. There will be no evident motions of the vocal organs or the hands. There will perhaps be not even any palpable muscular innervations. The only changes may be in the cortex, where we have at present no means of observing them. But the decided weight of argument seems to be on the side of the supposition that from the objective point of view, cognition appears as language.

But must we not admit that types of behavior other than speech are cognitive in function—such for instance as pointing or drawing geometrical figures? When I reply to the question, “Where is the book?” by pointing, is this response not essentially knowledge from the objective point of view? Hardly, for it would seem very much more in accord with the probable psychological facts to suppose that the cognitive part of the proceeding would be found in some such suppressed, implicit speech-reaction as: “The book is where I am pointing.” Again, it has been proposed that we try to communicate with hypothetical rational inhabitants of Mars by means of a figure of the Theorem of Pythagoras done large in canals on the Sahara desert. Would not the behaviors involved in planning and executing such a figure be essentially cognitive? Not so, for the essential meaning, the knowledge conveyed by such a figure, both to ourselves and to the Martians, would consist in the speech-reactions of which it would be the stimulus.

An apparently serious difficulty in regarding knowledge as consisting of speech reactions is found in the phenomena of qualitative perception. When I look at a red object, and see before me a patch of red, there seems to be something very direct and immediate in the situation. I seem to have what Bertrand Russell calls “knowledge by acquaintance.” In such respects it appears, *prima facie*, that cognition is a matter of impression rather than reaction. But what actually happens? An ethereal vibration of a certain frequency impinges upon the retina, and presumably, a certain kind of stimulus travels up over the optic nerve. Does

this constitute knowledge? It is difficult to say that it does. So far, it would appear, we have nothing at all but various metabolic changes. Of course the inner secret soul or consciousness of the subject may register something. But the outside observer knows nothing of all this. Still less does he know that the impression is one of redness. Indeed the very members of the subject himself are not aware of it at this stage. If we insist on stopping here, the whole business becomes a little secret between his cortex and his soul. Indeed, it is only when the stimulus goes across into response that it becomes anything at all. If the subject is a bull, and charges, we say that he is infuriated. If he is a man, and says "That is red" we say that he has knowledge. Even in the experimental psychology of sensation, where we might expect to find pure impressions if they exist anywhere, all the data are in the form of speech-reactions, the reports of the subjects.

Knowledge then, as a set of propositions or judgments, is something that possesses physical reality. It has a position in space and a duration in time. Certainly the mere geometrical relations of a piece of knowledge, a speech-reaction, are not of the first importance. Its structural correlations with the responding organism are the truly significant considerations. It is these which science must analyze. But to point out that a judgment has the same kind of ponderable reality as a chair is far from being a waste of time. It instantly banishes many of those vague and mystifying difficulties which have led epistemology into endless and futile dialectical mazes, and goes far towards clearing up the whole discussion as to the nature of truth.

This brings to our attention the second element in the cognitive situation, the object of knowledge. And here it would seem that we must inevitably take up the position which Bosanquet and the idealists have called "naïve realism." The object of knowledge will be the thing of physics, the thing, that is to say, which by possessing mass, momentum and so forth satisfies the requirements of, and is intelligible to physical science.

Bertrand Russell has several times discussed the relation of the things of physics to consciousness. In general, ignoring minor differences, his theory is that physical objects may be regarded as aggregations of sense-data. In this respect, of course, he is simply making a refinement upon the position of Hume. It is notable that this point of view admittedly culminates in solipsism, which of itself would be enough to suggest that it must be based on some radical error. For philosophers have almost always felt that solipsism is in the nature of a *reductio ad absurdum*, even when they have not seen their way clear to avoiding it.

The fundamental objection to defining physical things in terms of sense-data is that the existence of sense-data themselves is very doubtful. Of course it is allowed that sense-data are not found in a pure or uncombined condition, which, though it certainly raises serious difficulties, may not be fatal to Russell's theory. But this is by no means all. A thoroughgoing objective psychology denies that the patch of color of a given shape and size which is a constituent of the aggregate of data which makes up the thing according to Russell, is anything at all in and of itself. Unless the stimulus issues in response, unless it affects the behavior of the organism in some definite manner, we have no reason to believe that it exists as a stimulus at all. It is with responses that we are always concerned. Thus it is impossible to admit of sense-data as ultimate notions for epistemology. And the paradoxical issue of the attempt to reconstruct the things of physics as groupings of sense-data, the fact that it directly involves such a position as solipsism, is due to employing fictions as ultimates.

It would be very much better to regard the things of physics as classes of reactions. Indeed it might be suggested that this was the way out if the notion of sense-data proved untenable. But this would at once wreck the geometrical scheme by which Russell constructs the world of physics out of appearances. If we admit sense-data as he understands them, it is possible to suppose a relation of congruence between them. And in terms of this, and one or two other concepts, such as larger and smaller, and shielding, it is not difficult to derive direction and line. This done, we define a thing as the class of all lines (which themselves are classes of sense-data) which converge at a given locus. But with responses the case is altogether different. It is out of the question to set up such relations and to derive such a scheme in this case. There is a sense in which the thing might be regarded as the class of all responses in regard to it. But inasmuch as all such responses are occasioned by stimuli, we can never escape from duality. The conception of a class of responses may conceivably have a value, but the principle of Occam's razor can never get rid of entities called things, which are the causes of the stimuli issuing in these responses.

Thus it would seem that the adoption of an objective point of view not only results in giving up knowledge by acquaintance, but also commits us to a naïve realism in regard to the objects of knowledge. For those objects appear merely as the things of physics. Beyond this point analysis can not be pushed.

But it will be said that this completely ignores so-called abstract knowledge, which purports to deal not with ponderable in-

dividual things, but with universals. Universals, however, can always be regarded as classes of things. And Russell's theory of incomplete symbols shows that the class concepts are nothing but symbolic conveniences. In other words, we deal with universals by means of nominalism. Millenniums of adjustment have so refined human speech-reactions, that it is possible for us to use the convenience known as abstract thought.

The result of our discussion so far is that in the cognitive situation we have a relation set up between two classes of physical objects. On the one hand we have the specific object known as a speech-reaction; on the other, anything else, to which the speech-reaction somehow refers. Philosophy has usually dealt with the cognitive situation by revising its conception of the object of knowledge. The tendency has been towards a monism in favor of knowledge as something at any rate non-physical. The idealist has tried to show that the understanding makes nature. The empiricist has tried to show that nature may be regarded as made up of sense impressions. Common to both is the attempt to show that nature participates in the very essence of consciousness. Our own position here is the precise converse of this. It is a monism in favor of physical reality. It claims that knowledge itself is part of nature, that it is a specific phenomenon among phenomena. When we regard knowledge as a set of speech-reactions, the mysterious gap between mind and matter is evidently closed. It is true that there is still a duality between knowledge and the things known. But the crux of truth problem becomes the analysis of the relations between two physical things, between speech-reactions, and the things to which they refer.

Coming then to a study of the relation of knowledge to its object, it will be well to remind ourselves of the central difficulty with which our account must cope if it is to be successful. The discussion of correspondence theories of truth has definitely shown that their great weakness lies in their inability to explain how a particular piece of knowledge, a particular proposition, as it were, selects the particular fact in terms of which its truth value is to be determined. It has been claimed that apart from some such notion as the intention or internal meaning of a proposition, it is impossible to understand error. For if error is failure to correspond with something, we need some intention whose frustration shall constitute failure.

How then is every judgment uniquely related to the specific fact for which it stands? Let us begin with what have been called judgments of perception. Redefining this notion in our own terms,

such judgments are those where the stimulus of the speech-reaction is that to which the judgment has reference. I see a colored patch, and respond by saying "that is red." I see my desk light burning, and the muscles of my vocal organs are innervated to make the assertion "the light is burning." In such cases the relation between the judgment and its object seems sufficiently clear. It is the relation of response to stimulus. The object is the cause of the judgment, the causal nexus taking an intricate path through the nervous ganglia. So far everything is simple enough. But as soon as we pass from judgments of this type we find a much more complex situation. Let us take two examples.

Suppose a friend of mine has assured me that he turned out my desk light. Then, when I enter the room and find it burning, my reaction may take the form of asserting "he's a liar." The stimulus comes in over a different cortical set, and issues in a different response. Or again, take the judgment "Julius Caesar crossed the Rubicon." Here the stimulus will probably be letters on a printed page. In both instances the immediate stimulus is in a sense irrelevant. How then is the judgment related to its object?

The general principle of explanation in both cases is the same. When I see the light burning and react with an assertion about my friend, the total stimulus is not merely the impact of the ethereal vibrations upon my retina. It is this impact and in addition the words of my friend. And my neural set is such that I react with regard to the latter but not the former. And when I assert that Caesar crossed the Rubicon, I am reproducing the original reaction made by observers two thousand years ago, who saw him splash through the stream and found in the sight a stimulus to the response, "He has crossed the Rubicon!" The situation is that of the psychological investigator who tabulates the results of experiments he has never personally made. He is dealing with responses whose stimuli have never gone across his own nervous system. But the whole significance of these responses is their relation to just these stimuli.

As has been pointed out, this is nothing but a very general explanation. But to demand very much more would not be reasonable. Little is known as yet of the means by which the nervous system makes selections from and performs integrations upon the vast number of stimuli which come in all the time. But psychology and neurology are decidedly justified in assuming that this enormously complex mechanism performs the task somehow. This assumption is the only hope of any sort of scientific explanation of our mental life, and it provides an excellent programme for research. It is the best we have. Without it we are reduced to sheer

miracle. And for philosophy the advantage of dealing with the relation between knowledge and its objects along this line is that it keeps us in touch with the best scientific developments, and at least gives us the assurance that we are dealing with facts rather than fiction, even though our detailed knowledge of those facts may be very partial.

Thus to sum up, every judgment is uniquely related to its object by virtue of the fact that it is a response to which the object in question has been or is the stimulus. A judgment may not be immediately occasioned by the presence of the object to which it refers—for instance it may be occasioned by a printed record. This is due to the organization of our neural mechanism, which enables us to effect vast economies in living. But always we can push back to an ultimate stopping place where the stimulus and the speech-reaction are brought together in time and space.

This analysis makes it possible for us to define truth in terms of correspondence, and at the same time to give an account of error. Fundamental to this account is the notion of a normally functioning nervous system.

For a judgment is true when it is the response of a normal organism to a given stimulus. Suppose I say "Napoleon's tomb is in Paris." Let us assume that I have read these words somewhere. Pushing back along the chain of recorded responses of which the printed symbols that I saw were the last, I come finally to the place where the original observer, who started the whole series, stood. I am directed to a particular locus, and there I receive a stimulus that issues in the response, "Yes, Napoleon's tomb is in Paris." And this it is which constitutes the truth of the judgment. But suppose I read "Napoleon's tomb is in Berlin." Then I am directed to another locus, where I receive another stimulus, which issues in the response "No, Napoleon's tomb is not in Berlin." This means that the original judgment was false. The chain of recorded responses always directs us to some specific locus. This is the function of what has sometimes been called the intention or "internal meaning" of the judgment. And the notion of internal meaning has been used to wreck the whole correspondence theory. In and of itself, the notion seems to be quite inadmissible. The supposition that every judgment has ultimately two kinds of meaning is one to be avoided if at all possible. Such difficulties as these, and their accompanying dialectical objections to the correspondence theory of truth vanish as soon as we bring to light a mechanism which secures correlation between judgments and their objects.

It is impossible to arrive at a satisfactory account of the objective reference of judgments so long as we consider nothing but the judgments themselves. In and of themselves they are merely physical facts. They are no more and no less mysterious than so many chairs and tables. They are simply complexes of nervous discharge and muscular tension and relaxation. If we desire to understand their epistemological function, we must not consider them alone. To do so is to commit a fatal abstraction. We must take into consideration the entire structure in which they occur—the organic structure stimulated by contacts with objects outside itself, and responding to these contacts in a thousand various ways, some of which make up what we call knowledge.

In closing, it may be well to say a word as to the bearing of this point of view upon epistemology as a whole. Bertrand Russell is responsible for introducing into philosophy a technique which in a measure deserves to be called scientific. By applying the notions and methods of symbolic logic it is undeniably possible to get a very sharp definition of certain issues, and consequently to arrive at definite solutions of detailed problems. But the difference between modern science and philosophy is something more than a mere matter of technique. It is a difference in point of view. Science is objective, and philosophy, in large measure, is subjective. Russell's own distinction between knowledge by acquaintance and knowledge by description is essentially subjective. Philosophy can not become truly scientific till it becomes objective through and through. And a most important step in this direction is to adopt an objective point of view in studying the knowledge-situation.

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THE COMPLEX DILEMMA—A REJOINDER

I REGRET that absence from the country has prevented my giving earlier attention to Professor Brogan's criticism¹ of my article on the complex dilemma,² since it contains a serious misrepresentation.

The "exact meaning" of my criticism of the dilemma is said to be contained in the following dilemma: "If the minor and the conclusion are exclusive alternatives, the argument is fallacious; and if the minor is exclusive and the conclusion is non-exclusive then the argument is redundant. But either the minor and the conclusion

¹ This JOURNAL, Vol. XVIII, pp. 566-7.

² *Ibid.*, pp. 244-6.

are exclusive, or the minor is exclusive and the conclusion is non-exclusive. Therefore the argument is fallacious or redundant." And Professor Brogan adds: "It is perfectly obvious that the minor premise here is false, because it overlooks the possibility that both the minor and the conclusion may be treated as being formally non-exclusive alternatives. If this treatment is given, the complex dilemma is neither fallacious nor redundant."

The reader who cares to refer to my article will see that these remarks are wholly misapplied. So far is it from being true that I did not consider the last-mentioned possibility, that I showed explicitly that in that case the argument reduces to a familiar form of sorites. When Professor Brogan concludes that "the non-exclusive interpretation of disjunction is required for the complex dilemma," he is merely restating my own contention.

There is one point in the criticism which is well taken. The example of a complex destructive dilemma, which I quoted from Whately and Jevons, was badly chosen for my purpose. As understood by Whately it was merely redundant, and as interpreted by Jevons it was entirely correct. It is not quite accurate, however, to say of Whately that, like Jevons, he "carefully and explicitly defended the non-exclusive interpretation of 'or'." Whately held that in most cases the exclusive interpretation is called for, but that sometimes (depending on the context) the alternatives are to be taken as non-exclusive. Accordingly, in his account of the dilemma two types appear. On the one hand, it is explicitly recognized that the minor is sometimes not a strict disjunction; and on the other hand, in the construction of various examples, care is evidently taken to make the minor a strict disjunction. This is the case with the example which I quoted. It is also the case with the following. "Either they [the blest in heaven] will have no desires, or have them fully gratified." "He [Æschines] either joined [in the public rejoicings], or not." Furthermore, there is no suggestion in Whately's account that where the minor is thus clearly intended as a strict disjunction, the conclusion requires a different interpretation.³

This point is historically of some importance, because it is to Whately that the theory of the dilemma in its present form is directly due; and it is probably to the imperfect clearness of his account that the current misunderstanding of the topic is to be traced.⁴

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³ *Elements of Logic*, London, 1848, pp. 108-110.

⁴ Thus Bain, who draws upon Whately, interprets the disjunction strictly, without suspecting that he has modified his borrowings in any way. Cf. *Logic*, London, 1910, Vol. I, pp. 119, 121.

BOOK REVIEWS

The Reign of Relativity. Viscount HALDANE. London: John Murray. 1921. Pp. xxiii + 430.

Lord Haldane's volume is a clear and timely presentation of the general standpoint of objective idealism in the light of the science and culture of today; it falls readily within the comprehension of all seriously interested in philosophy, but without any sacrifice of essentials or evasion of difficulties. It is unfortunate that the meaning of relativity, like that of idealism itself, has become—quite apart from the scientific theory—extremely vague and confused. Haldane's own use of the term is best described as the explication of the principle of "degrees of reality." "The distinction between appearance and reality becomes one of degrees towards full comprehension. Conceptions mould the experience in which they are applied. Through our conceptions we isolate, but we isolate only special aspects of reality." These aspects, that is, never represent so many "separately existing and independent realities";¹ but separateness is repudiated not in any subjective fashion, but with reference to experience and to reality as a whole.²

It is especially noteworthy, in view of recent discussion, that this initial position is conjoined with an unambiguous realism; for realism can find its fullest development, I think, only in an alliance with an idealism as truly objective as itself.³ The question is obviously too wide for consideration here; but Haldane's position is perfectly definite. "What is before us is there, and is independent of the particular onlookers who are present along with it." Thus subjectivism is excluded; and with it goes all false abstraction; for "it is discoverable for us only by means of observation and experiment, and not by *a priori* reasoning. . . . The conception of an electron may or may not be final, but it indicates what is recognized as a real complex of actual objective factors."⁴ On these points Lord Haldane, to a marked degree, endorses Dr. Whitehead's contentions in his *Concept of Nature*.⁵ But this agreement is qualified by the criticism that Dr. Whitehead's final conclusion is, from the strictly philosophic point of view, too absolute, inasmuch as he "can hardly claim to have excluded nature from the imputation of the in-

¹ Pp. 36, 35.

² "It is a relativity that is not subjective, in the sense that things are only to each of us what they appear to be" (p. 37).

³ "The difference between idealism and realism disappears in the larger outlook that embraces the difference itself" (p. 137).

⁴ Pp. 36, 47. Cf. p. 211—"The world is actual and independent of its observer. . . ."

⁵ Cf. this JOURNAL, Vol. XIX, No. 6, pp. 146-157.

gression of mind into its constitution" (p. 81). I think, however, that the difference here is entirely one of standpoint; Dr. Whitehead, "abjuring metaphysics," as the scientist is entitled (if not indeed compelled) to do, regards natural phenomena as, *primâ facie*, outside or beyond the observer's mind; but this in itself does not imply any discontinuity between mind and nature as interpreted by the more inclusive philosophical standard.

From this basis Haldane develops his doctrine of relativity in the sense that, universally, "Knowledge is foundational of reality," so that "we must take account of all the degrees and levels at which it appears and interpret them according to their places in the entirety. . . . Knowledge is foundational of both apprehension and what is apprehended."⁶ At the first glance this seems to confirm the too general impression that idealism is essentially logical and abstract—a matter of intellect or of discursive thought. But it is an outstanding merit of this volume that such an erroneous interpretation of idealism is emphatically disclaimed. "Knowledge" has the fullest possible significance. It is equivalent to mind, or to experience, as one continuous, immanent, and infinitely diversified whole. It is "ultimately one and indivisible. . . . Mind, in the fullest meaning, is foundational to reality. . . . We have to interpret knowledge in no narrow sense. It will have to extend not only to notions but to feelings." Experience consists in short of "the dynamic activity of mind . . . dynamic and not static, and is in its real nature subject yet more distinctly than substance."⁷

The principle of relativity, thus interpreted, is classical. But Haldane gives it a thoroughly independent and individual consideration in its bearing upon science and religion, society and art, which should do much to clear away the distortions and misunderstandings which inevitably gather around every great historic system. Both the exponents of idealism and its more recent opponents are subjected to vigorous and effective criticism, which may be summarized in the contention that, alike in the case of Bosanquet, Pringle-Pattison and the New-Realists, the full implications of the finitude of knowledge are not realized and developed; but this more controversial feature of the volume is best left to the consideration of the writers concerned.

The lengthy section dealing with the recent development of the purely scientific theory of relativity is naturally of special interest. The outline of the theory itself is as free from technicality as is possible in dealing with a subject so abstract, and should be helpful

⁶ Pp. 124, 137.

⁷ Pp. 126, 128, 147, 155, 166.

to those who still find it as a whole obscure. But when we turn from exposition to interpretation it seems to me that Haldane, though to a far less degree than previous writers, tends to read too much into the theory in both its scientific and philosophic aspects. Its strictly scientific importance is so fundamental that some degree of overstatement—for which, however, its originators are not themselves responsible—was inevitable, and here a reaction is to be expected. Haldane's objectivist standpoint safeguards him from the tendency to argue that scientific relativity implies philosophic subjectivity; "there is not one system of space-time in contrast with which others are subjective" (p. 402); and he employs Einstein's results merely by way of illustrating his general principle (p. 39). But still he appears to me to err almost as seriously in another direction, inasmuch as he omits to distinguish definitely enough between space and time, as such, and spatio-temporal measurement systems,⁸ and therefore fails to recognize sufficiently that in passing from the latter, with which the scientific theory is concerned, to the former, which are the main objects of philosophical speculation, we are dealing with vitally different aspects of the real whole. The consequence is that he falls here into the error against which he constantly warns us—"the blunder of confusing our categories" (p. 37); and similarly he interprets the purely scientific conclusions too literally, without due allowance for what may, from the analogy with Kant's general method, be called the *als ob* element in the entire theory. Its principles, that is, are very largely methodological; they are adopted, and they are valid, only for certain abstract purposes of mathematical calculation and physical theory, so that (at least as matters stand at present) it is illegitimate to regard them as true apart from certain fundamental qualifications necessary when a wider range of phenomena is considered. This applies, *e.g.*, to the treatment of gravitation on p. 57.

Another somewhat perplexing feature of Haldane's position is his emphasis on the discontinuity of our categories. A consistent relativism demands, I think, an ideal continuity; and much, if not indeed all, of the value of Einstein's methods lies in the fuller continuity which they import into physical theory. Continuity is indeed clearly recognized. The result of the development of knowledge "has been accomplishing itself continuously" (p. 417), although the categories which we actually employ are as a matter of fact

⁸ This fundamental distinction, curiously enough, receives due emphasis from the scientists themselves. Cf. this JOURNAL, XVIII., pp. 214, 215. Also Ed-dington, *Nature*, Feb. 17, 1921, p. 804: "Worldwide time is a mathematical system; it has not any metaphysical significance."

seriously lacking in interconnection. But idealist logic would, I think, regard this defect as due merely to our limited knowledge. Haldane, however, seems to regard discontinuity not only as occasional and transitory, but even as essential. He speaks of "levels or degrees in knowledge which have relations to each other, but are not reducible to each other. For they are ultimate. . . . The actual exhibits itself in orders irreducible to each other. . . . A living being that knows seems to belong to an order quite different in kind from that of one that lives without knowing. . . . Meehanism and life belong to different orders neither of which is explicable in the terms that belong to the other."⁹ If this is literally true any continuous and progressive development of knowledge would surely be impossible; but when we consider its actual character, what we seem to find is an unceasing growth in continuity which goes on, in principle, without limit;¹⁰ unless of course we define our categories to begin with so that they become mutually exclusive, and "meehanism," *e.g.*, means "non-living" while "life" means "non-meehanical." Haldane bases his idealistic relativity on "The Hegelian Principle" (chap. XV); and I welcome his plea for the closer study of Hegel, together with his protest against the prevailing misconception of his system. "No philosophical doctrine has been more misrepresented or given to the world in a more distorted form than has been Hegelianism in current literature" (p. 344). But the basal principle of Hegel's *Logic* is the continuity of the transition from category to category;¹¹ so that if we are to take the statements just quoted as really typical, there seems to be a fundamental discrepancey between Haldane's position and that of Hegel; the latter, however, appears to be more firmly established by each advance in the content of knowledge.

But there is ample room for differences of opinion here, and Lord Haldane would be the last to expect complete unanimity. His volume, taken as a whole, is a very valuable and weighty contribution to philosophical literature.

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⁹ Pp. 128, 132, 147, 161.

¹⁰ *Cf.* p. 415. "The capacity of man to interpret is unlimited in its range, because the range of mind is unlimited in its power of framing general conceptions." But does not this in itself imply that categories are not (in principle of course) ultimately irreducible?

¹¹ *Cf.* McTaggart, *Studies in the Hegelian Dialectic*, secs. 112-114, and *Commentary*, sec. 12.

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NOTES AND NEWS

The Aristotelian Society met in London on February 6, 1922, Professor Wildon Carr in the chair. Mr. A. H. Hannay read a paper on "*Standards and Principles in Art*," a synopsis of which follows:

The problem of standards and of objectivity in art is usually

debated on the basis of the alternatives of standards-and-objectivity or no-standards-and-subjectivity; and no third possibility is envisaged. Neither alternative being satisfactory, the position is a stalemate. Mr. Balfour's attitude in his Romanes lecture is typical. It is true that the standard and rule must be rejected. They involve a vicious circle and enjoy only a counterfeit stability. No mediating criterion can be set up. Each new and individual work of art carries with it its own individual and original awareness. This view however does not necessitate a lapse into subjectivism, if it is realized that the awareness or taste is itself a striving for objectivity and rightness. The very search for standards is itself the outcome of this incessant quest for right taste. While this particular search has proved fruitless, it is a half truth to say that nothing can be achieved by means of reflection, definition and analysis. Beauty is not entirely unique and indefinable. It is a process, a constructing, and can be differentiated from other processes, such as history, science, philosophy. Actually, modern criticism is full of psychological analyses which definitely involve reflective principles. These however are distinct from the old standards, inasmuch as they do not pretend to anticipate the individual content of works of art. Nevertheless the same question arises regarding them as regarding standards. Do they precede, accompany or follow upon esthetic creation and appreciation? And if they follow upon it, what is their value? It is the commonly accepted view that they are a later product. This view has been stated very lucidly and trenchantly by Benedetto Croce and is very plausible. Yet history does not confirm it and it does not explain the fact that criticism clarifies taste and is expected to do so. Croce's own admirable criticism is a good instance. It is therefore suggested that the process imagination-principle is not a passage from one independent activity to another, but a development requiring from the start both activities and in which a modification in one means a modification in the other. The critic emphasizes the universal element while the artist emphasizes the individual element; nevertheless the critic attains a clearer consciousness of the value and significance of the individual work of art.

THE JOURNAL OF PHILOSOPHY

ROMANTICISM VS. THE WORSHIP OF FACT

RECENTLY a noted writer reiterated the ancient but fallacious charge of subjectivism against the romantic attitude. The dispute normally arises in the following way: The romantic endeavors to escape from the world of the actual into that of fancy, or more specifically into the realm of esthetic and speculative imagination. The critic, however, interprets this attitude as an unwillingness to submit to outward fact and accuses the romantic of a desire to withdraw into a world of his own creation.

The indictment rests on a confusion between the actual and the real. The critic begins with a fallacious identification of the real with the actual and then goes on to describe any breaking loose from the latter into the world of imagination as a detachment from the objective and a retreat into the subjective. But it is only a vulgar preference or extreme *naïveté* that could lead one to limit reality to the actual; over and above the actual, there is the field of subsistence, of ideal entities, of forms, of possibilities; and the romantic imagination is not vain dreaming but an extension of the area of knowledge itself beyond perception into the realm of these ideal essences.

It was the distinctive merit of Leibniz to have pointed out with clearness that besides the actual there is also the world of possibilities, inhabited by entities that are *real* though not existent. Leibniz, in commenting upon the common-sense view that "heavy bodies really exist and act, but possibilities or essences anterior to existence or apart from it, are imaginary or fictitious" urges that "neither these essences nor what are called eternal truths regarding these essences are fictitious but that they exist in a certain region (if I may so call it) of ideas, that is to say, in God Himself."¹

Now, the romantic escape from the actual is but a transfer of residence into the realm of possibilities. Indeed, romanticism is to art what pure logic is to thought; both are other-worldly, and differ only in the fact that, whereas the former is seeking beauty, the latter is in quest of intellectual values in the universe of all possible worlds. Hence, far from being subjectivistic, romanticism is a projection of the self into the objective; far from being a flight

¹ Quoted from the *Essay on the Ultimate Origination of Things*.

into the void of the unreal, romanticism is a sharing, along with God, in the contemplation of the vast landscape of all possible worlds.

It is the "realist" himself that must be charged with subjectivism. For, by insisting that attention be confined to the actual, the realist manifests a limitation of interest to himself and to his immediate surroundings. After all, the world of actuality has no intrinsic advantages over the world of possibility; we come to like the former quite unreflectively because we find ourselves in it, as we like our brothers and sisters, or our country. To be transported into the possible is to be taken out of ourselves and our own, and the realist, refusing as he does to leave the borders of his spiritual birthplace, betrays an intellectual provincialism; his mind remains untravelled. But the romantic temperament is adventuresome and free, launching bold expeditions into unexplored regions of possibility, all the while going about, not in the fashion of a Baedeker tourist, but immersing itself in the new regions and investigating them with an open mind, unhampered by the prejudices of the little bit of actuality into which it has been born.

The realist suffers from inertia of mind; he is too indolent to move about. But romanticism is the mind become active and restless, for fancy is like blazing coal in the engine of the soul. Thus, the realist's world is poor and narrow, devoid of the wealth and variety of the romantic scenery. And if the poet's dictum that "he does not England know who only England knows" be true, then, by analogy, the realist knows not even his corner of actuality well, because he has not contemplated it in the light of other possibilities.

The fundamental, though tacit, assumption of the defenders of realism is that actuality possesses worth as such and that romanticism is at a great disadvantage for its neglect of the actual. Anselm, even Leibniz himself, maintained that actuality is a requisite of perfection and the transition from possibility to realization an absolute gain. Now, for one thing, Kant has refuted Anselm by showing that actuality adds nothing to possibility. In fact, there is something essentially accidental about actuality. Abstractly, any causal law is as possible as any other; yet one is realized and the others are not. There is no reason why dead people should not talk, but they don't; there is no reason why the sun should rise; it simply does rise and keeps on rising, inexplicably, every morning. Existence is therefore lacking the dignity bestowed by necessity.

Moreover, do we not all admit that distance lends enchantment—

distance in time, distance from the present, in other words, remoteness from the actual? The past is beautiful because it represents that portion of reality which has gone out of time into eternity. That spatio-temporal reality is at best a poor affair, is evidenced by the fact that reason in the guise of science is engaged in a continued effort to patch things up, to fill up vast gaps by correspondingly vast assumptions, introducing the hypothesis of uniformity to explain away the apparent diversity, sewing up the ragged edges of events with the thread of causal law, trying to compensate for the coarse exterior of the stream of happenings by constructing behind appearances a conceptual world of points and atoms, so much so that virtually the larger part of what common-sense and science call reality is nothing but intellectual construction.

But may not actuality claim a certain "robustness" and "concreteness" denied to the world of pure ideas? Even that is doubtful. The robustness of the actual is of a hectic hue and deceptive like the color on a feverish face or the energy exhibited by one who is intoxicated. For the more penetrating and intense the intellectual vision, the more does the actual fade into a shadow, as Plato came to see, until, in the mystical experience, it dissolves into an illusion. The claims of fact upon our attention are not of intrinsic merit but of dominion; we must take notice of the immediate situation because, if we do not, we suffer. And yet it is into this sea of fleeting, chaotic existence that Bergsonian mysticism invites us to plunge—stripped bare of all clothing of intellectual elaboration—to be drawn below by fickle currents, away from the fresh and free atmosphere of creative thought.

In sum, existence is an evil and creation the original sin. Leibniz himself recognized that a possibility can never be realized as such because the receptivity of the world is limited. To realize is to weaken, to dilute the ideal. That, as J. S. Mill complained, a heretic becomes a tyrant as soon as he enters into power—in other words, that one ceases to care for freedom as soon as one has attained it—is a vivid instance of the vicious effect of attempting to transfer the ideal from the realm of possibility to that of fact. The question instinctively arises, why there should be a world of existence at all. If we look at the process as a passage from the possible to the actual through the mechanism of creation, then the problem before us is indeed insoluble. But the situation is simplified if we take existence as granted and regard the universal process as one of a gradual liberation of the possible from the existent. To this view, the law of the dissipation of energy lends strong support. Obviously, matter obstinately resists extinction, yet the availability

of energy for work constantly diminishes; in other words, *its ability to embody new forms and ideas is gradually being reduced*. Spurts of new life and the formation of new combinations indicate desperate efforts on the part of the actual to extend its hold upon the ideal; but with the eventual cessation of work, foreshadowed by the so-called law of degeneration, the dominion of matter over form will come to an end, and the realm of possibilities will no longer suffer encroachment from the actual.

In line with this tendency are all the noblest aspirations of man as embodied in art, in religion, and in philosophy. In these, the soul proclaims itself an exile in the actual and voices a profound yearning to escape from the immediate in time and in space. Romanticism, then, as we have defined it, is not by any means an isolated movement. Philosophy and poetry constitute preëminent instances of the soul liberating itself from fact under the stimulus, in the one case, of intellectual and in the other of esthetic imagination. Even science, as we noted above, is not a mirror of fact, but an intellectual embroidery upon it. And as philosophy expresses the romanticism of the intellect, so does the attitude of faith represent the romanticism of the will. For what is this undying optimism in the face of failure, this pathetic devotion to hopeless causes, this faith in the eventual doing of justice when injustice rules unchecked, this belief in human beings and confidence in their unlimited progress, but a vast construction of the moral imagination upon the very facts of failure?

In the long run, life can not be left wholly out of account; after all, life is one of the many dreams and the actual world one of the infinite possible worlds. We should therefore school our minds to conceive the actual *sub specie possibilitatis*—to use it indeed as a stepping-stone into the domain of possibility. For the enlightened soul inhabits a world whose area embraces the actual but extends far beyond it into the subsistent, and its home is the entire universe of being.

RAPHAEL DEMOS.

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RELATIVITY, OLD AND NEW ¹

IN the presentation of a scientific theory for philosophical consideration, it is of primary importance that the fundamental bases of the theory be brought prominently, and indeed unequivocally

¹ Certain objections to J. E. Turner's article "Some Philosophic Aspects of Scientific Relativity," this JOURNAL, Vol. XVIII, No. 8.

cally to the fore, and that the points at which it departs in its vital essentials from previously held theories relating to the same phenomena stand forth in unmistakable relief. From this standpoint I can not but take exception to Mr. Turner's presentation, as well as to some of his conclusions.

In his second paragraph Mr. Turner wisely says " . . . the term 'relativity' itself accounts for much of the prevailing confusion," and further, "Even its widest later applications are concerned only with the relative velocities of systems and observers, and with the mathematical and other scientific (but not philosophic) implications of these. . . . The theory has . . . no bearing on the subjectivity of Time and Space." The first quotation would suggest that an explanation of the term "relativity" in its application under discussion is desirable, and this I shall endeavor to supply. The second is true only if "philosophic" is used in a very narrow sense. Philosophy, certainly if it "holds an inalienable lien on the whole of experience" is concerned with other aspects of time and space than their subjectivity and objectivity. While relativity may throw no additional light on the question of the degree of objectivity possessed by the metrical time and space which are mathematically treated, it introduces changes in our ideas as to the relations between them, to motion, and to things in time and space, which, even if not "revolutionary," are profoundly different from the classical conceptions. Revolutionary is an hyperbolical word, but the theory of the relations between space and time required by modern physics must command philosophical attention, though it be characterized by a more modest adjective.

The idea of "relativity" in physics is by no means modern, but has been assumed in Newtonian mechanics almost axiomatically in the case of uniform motion. This "Newtonian Relativity" is the relativity of the "man in the street," and in everyday language is nothing more than the statement that if a person walks four miles per hour from the rear platform to the front platform, of a trolley car running twenty miles an hour, he will cover ground at the rate of twenty-four miles an hour; and further, if a boy standing on the track in front of the car throws a stone at a speed of one hundred miles an hour, it will hit the passenger at the speed of one hundred and twenty-four miles an hour. This seems axiomatic to the non-scientifically inclined, and in the language of physics defines space as a region in which Euclidean geometry is valid. In such a space figures may be moved about and rotated without change of size or shape, either while moving, or after having changed their relative

positions; velocities are directly additive, and by combining a sufficient number of finite velocities, we may *exceed any specified velocity*. If we have a record of the motions of our passenger in the trolley car relative to the car (as for instance the spots that he tapped on the floor with his cane, which he is in the habit of swinging every second as he walks) we can obtain a record of his positions relative to the track by adding to the distance of each spot from the rear platform, the quantity obtained by multiplying the time of that spot by the velocity of the car, and laying off the total distance so computed from the position of the rear platform when the car started. If we denote the distance from the rear platform of the car by x' and that from the station by x we find that $x' = x - vt$ (1) where v is the velocity of the car. The position of the passenger between the rails, and the height above the rails are not affected by the motion of the car, and there is no discrepancy between the passenger's watch and the clock in the station, provided that they agreed at the start. These facts are described by the equations $y' = y$, (2), $z' = z$ (3), and $t' = t$ (4). The important features of this transformation, for our present discussion are:

- (a) Distances are unaltered.
- (b) Directions are unaltered.
- (c) Velocities are directly additive.
- (d) *The time is entirely independent of the space transformation.*
- (e) No forces are introduced in one system that were not present in the other.

It seems inherent to our sense of physical things that they should be describable from two systems of reference, *i.e.*, from the car and from the ground, in such a way that certain properties which we feel to be fundamental should remain unaltered in the two descriptions. In the transformation from one system to another which we have just described, *i.e.*, one in which the two systems of reference have a uniform velocity relative to each other, these properties are: length, direction, mass and force. It is important to notice that no velocity is invariant. The velocity with which the passenger is covering the ground is the sum of the speed with which he walks in the car, and the speed of the car.

The above discussion covers "Newtonian relativity" in its essentials. It is something so familiar that we almost instinctively feel it, and the quantities that it leaves invariant we have hitherto regarded as fundamental in physics, and, in fact, as "objective" in the same sense that "things" and any relations between things are objective. So deeply was the idea of the invariance of these quantities embedded in our physical concepts that when new forces

were introduced in cases in which the motion was not uniform, we did not regard it as a violation of the principle, and we called such forces "inertia forces," although the question, "Uniform relatively to what?" was lightly avoided. But while the above discussion is in accord with everyday thought, certain physical phenomena are not in accord with it.

Within the last hundred years, the results of various experiments have forced us from this delightfully simple and "self-evident" relativity. These experiments are of two general types. One type shows that whether we are moving toward, or receding from a ray of light, *it approaches us with the same relative velocity*. From the point of view of classical mechanics this conclusion is little short of astounding, but it is arrived at by direct physical measurement, and must be accepted, at least pending the results of further experimental investigation. It also appears that this is not due to the medium which transmits light (if such there be) being carried along with us as we move.

The other type of experiment shows that the dimensions of particles moving with velocities approaching that of light, vary in a certain way according to the velocity of the system from which they are measured. An electron suffers a contraction in the direction of its motion relative to the system of measurement, and its mass increases as a certain function of its velocity. Computation also shows that, accompanying these transformations, there must be an increase in the units of time on the moving electron, relative to the units on the observing system. These phenomena were known as "The Lorentz-FitzGerald Contraction," and it was first shown by Einstein that they depend not on any peculiarity of electrons, but on the very act of measuring by a means of communication, between object and observer, the velocity of which is invariant.

The revision of the Newtonian principle of relativity to account for these experimentally observed facts has been effected by Einstein in his "Special Theory of Relativity." He has shown that all these phenomena are capable of explanation if we drop the assumption of the invariance of our supposed fundamental physical quantities, and proceed on the assumption of the invariance of the velocity of light. When we do this the stability of our old constants flies to the winds. The length of our trolley car becomes shorter when it is in motion relatively to us than when it is stationary, and the passenger's embonpoint suffers even more so, provided he is walking towards the front of the car; also his velocity over the ground is a little less than the sum of his walking speed and

the speed of the ear. The equations of this transformation which take the place of (1) and (4) in the Newtonian theory are

$$x' = \frac{1}{\sqrt{1 - \frac{v^2}{c^2}}} (x - vt) \quad (5)$$

and

$$t' = \frac{1}{\sqrt{1 - \frac{v^2}{c^2}}} \left(t - \frac{v}{c^2} x \right), \quad (6).$$

In this transformation none of the properties considered under the former transformation holds, with the exception of (e). The point that might be characterized as "revolutionary" is that the space and time transformations are not independent. Now it is true that in previous physical theory four independent coördinates have been used to describe an event, three to establish a position in space, and one to signify the time of that position; but the distinction between space and time has always been definite. The characteristics of space remained invariant in time, and those of time were invariant in space. Under such conditions it was of no utility to complicate the discussion by saying that an event was specified by four coördinates in a four-dimensional space-time, although this conception could have been used by any one so inclined. The sense in which this conception is used in the theory of relativity is, however, far more fundamental.

Consider, for instance, our observation of a cube. Disregarding the effect of binocular vision, a cube may appear to us as a variety of plane figures, according to our line of sight. From one position it appears as a square, from another as an hexagon with three lines from alternate vertices to the center. It may also appear in irregular shapes, with varying lengths of edges and different angles. We further observe that these shapes change as we change our position relative to the object under observation. Now we might formulate a set of laws which would tell us how this plane figure alters its size and shape as we observe it from different distances and directions, but they would appear rather complicated and arbitrary. Equations (5) and (6) are laws so formulated. However, with a certain amount of mathematical insight, we might postulate a three-dimensional object which is *invariant* to the transformations caused by observing it from different directions, namely the cube, and say that the variety of plane figures we see are views of this invariant object from different directions. Equations (5) and (6) say just this, except that the four-dimen-

sional space-time in which we view the phenomena from different angles, depending on our velocity relative to the phenomena, is not Euclidean. It is homaloidal, and may be made to correspond to a Euclidean space of four dimensions by substituting for time a variable proportional to it, but whose square is negative. In mathematical analysis such a variable is technically termed "imaginary," and the use of "imaginary" in this sense is responsible for Mr. Turner's statement that "... the 'four-dimensional world of Minkowski' is not a universe which is more truly real than the spatiotemporal world of perceptual experience." The use of the "imaginary" in this connection is entirely unnecessary, and is indeed only a mathematical artifice to simplify certain aspects of the theory, just as certain vectors are represented by complex numbers which have an "imaginary" part, in computations involving alternating currents. We may say that Minkowski's world is Euclidean and four-dimensional, but that our sense of perception of the fourth dimension as time can not perceive it in kind with the other three dimensions, but must perceive a different function of it, i.e., $-\sqrt{-1}u$, where " u " is in kind with the three spacial dimensions, or we may say that we perceive all four dimensions as similar in kind, and that Minkowski's world is non-Euclidean. In either case the percept-concept is non-Euclidean, and the argument has the metaphysical possibilities of the question as to whether we are looking up if we are standing on our heads and looking down. The four-dimensional world is more real than the spatial world of three dimensions in exactly the same sense that the cube is more real than the multitude of variously shaped plane figures we observe when looking at it from different positions. It is the invariant that we are compelled to regard as fundamental in seeking that interpretation of results which involves the least number of arbitrary assumptions. In the same sense that it would be exceedingly arbitrary to regard the plane figure which changes size and shape as we change our position, as the fundamental entity, it is arbitrary to regard the figures of spatial points which change shape according to equation (5) as fundamental, when the changes may be perfectly interpreted as a revolution of an invariant in four-dimensional space.

We must, therefore, take direct issue with Mr. Turner's statement that "These methods and principles, however, do not affect in the remotest degree the philosophic problems of objective reality, the pros and cons of which remain what they were before. . . ." Both scientists and philosophers are in danger of falling into a pitfall of verbal quibbles when they attack the question of what

is objective. If by "objective" is meant an unknowable reality underlying phenomena, it is hard to see how any physical facts could throw light on the question of such an objective reality. And if by "objective reality" is meant the ordinary perceptual experience of common-sense objects, that is only altered by the Lorentz-FitzGerald contraction, and this would seem to be Mr. Turner's position. But if by "objective" is meant either a rationalized experience, or a world independent of the awareness of a percipient (in the sense in which the neo-realists use independent), such an objective reality is profoundly changed by the "Special Theory of Relativity"; for it transfers the question from the three-dimensional world of spacial points to the four-dimensional world of space-time. In our efforts to narrow the results of physical perception to what appears most likely to be connected with an objective reality, we postulate that it must depend as little as possible on the personality of the observer and the point of observation. This certainly gives the invariant world of four dimensions a stronger position than one composed of three dimensions that vary as we observe them under different conditions; and it would seem that the position hitherto occupied by the three-dimensional cosmos must now be taken by Minkowski's "world" of four dimensions.

Before leaving this part of the discussion I can not refrain from voicing an objection to Mr. Turner's exposition of the transformations in terms of sound. The transformations of the "Special Theory of Relativity" owe their characteristic significance to the invariance of the velocity of light relative to any observer. Mr. Turner's congenitally blind observers could ascertain their velocities relative to the medium which transmits sound, without difficulty, and could also detect the relative velocity of another source of sound. Further, if we grant them a sufficient degree of hyperesthesia, they could detect the Lorentz-FitzGerald contraction, but of course they would not interpret the constant " c " as the velocity of light. Indeed it is not necessary to the special theory of relativity that the velocity of light should be exactly the fundamental invariant velocity " c ." The point is that such a maximum exists, and the velocity of light is so close to it that we have as yet detected no difference. For the blind observers to draw Mr. Turner's conclusion that "what is heard is real, and the audible differences in the firing rates of the two guns actual and ultimate," it would be necessary that they be congenitally lacking in other respects than eyesight. Mr. Turner's footnote in this connection regarding the invariance of the velocity of light is analogous to the introduction of the Prince of Denmark as epilogue.

To proceed to the "General Theory of Relativity," it will be recalled that the transformation to a uniformly moving system made no change in the property (e), *i.e.*, no forces were introduced into one system that were not in the other, although the question "Uniform relatively to what?" was avoided. Newton saw the difficulty and dodged it by saying in effect, "Relatively to the fixed stars." Now if we try to express the relations between the two systems in such a manner that they are of the same form even though the systems be accelerated, we find that the forces are not invariant, and indeed depend entirely on the way in which we measure the phenomena in question. The general theory states the characteristics of a phenomenon relative to any set of quantities we may choose to measure it by, and shows that the special theory holds only in space free from the effects of gravitating matter. In the presence of gravitating matter the quantities that are invariant are still further reduced, and objective reality in the sense in which three-dimensional objects have been regarded as real becomes still more elusive. The four-dimensional manifold of space-time is not homaloidal, but "curved," and its curvature is determined by an operator called a tensor, whose value for any point is dependent upon the distribution of matter. This curvature must be regarded as having a certain objectivity. By suitably choosing our conditions of observation in any one place, we can remove it locally, as for instance we can lose weight for a few seconds in an elevator that starts to descend, but our elation is short lived, or would be should we get on a pair of scales as the elevator approaches a landing. Removing the effect in one location augments it in the remainder of the continuum.

Among the physical concepts formerly considered fundamental, the only ones that still remain invariant are the concept of "action," which is of the dimensions of energy times time, and the thermodynamic function, "entropy." From the new standpoint, qualities that we have hitherto regarded as theoretically being able to increase without limit, are definitely limited. Thus we have a maximum velocity " c ," and a definite extent of space which may be computed as a function of the mean density of matter. There also appears to be an upper limit to the density of matter or energy. These results are due, not as Mr. Turner says in concluding "to the fundamental rôle, already alluded to, played by light and vision in normal experience," but to the discovery that there is a fundamental velocity that is invariant, and which happens to be very near the velocity of light; so near in fact that the two are quite generally regarded

as identical. My reason for stating it in this way is to emphasize the point that is *not* the fact that this velocity is that of light, but that it is *invariant* that leads to the theory of relativity.

H. A. WADMAN.

NEWPORT NEWS, VA.

AN HISTORICAL ANTICIPATION OF JOHN FISKE'S THEORY REGARDING THE VALUE OF INFANCY

JOHN FISKE is universally credited, and justly, with making an important contribution to the theory of evolution. I refer to his theory regarding the meaning and value of the prolonged period of human infancy in comparison with the briefer infancy of the lower animals. Without questioning Fiske's independence of other sources in developing his theory, I would like to call attention to an obscure essay published nearly forty years before Fiske's first book appeared, an essay in which the two points regarding the value of infancy made by Fiske are made in a strikingly parallel manner.

A few months ago Mr. George W. Robinson, Secretary of the Harvard Graduate School, showed me an old volume which he had found in a second-hand book-store; and he called my attention to an essay in it which, as he thought, was similar to writings by Fiske many years later. This volume is entitled *The Friend's Annual; or Aurora Borealis*. It consists of essays written by "Members of the Society of Friends" and was published in England in 1834. Among the essays is one covering six pages (pp. 152-57) entitled "On the Helpless State of Infancy," which is signed simply with the initials, V. F.

The purpose of V. F., writing before the acceptance of evolutionary views, was to show the "graciousness of Providence" in establishing the long period of helpless human infancy. The purpose of Fiske was to support the evolutionary theory by showing the significance of a lengthened infancy as a factor in bridging the gap between brute and man, and to account for the evolution of human intelligence and morals. Indirectly, however, Fiske was attempting to "justify the ways of God to man" by pointing out the goodness of the Power manifested in the evolutionary process, and for this reason the similarity between Fiske's theories and V. F.'s become all the more striking. According to Fiske, as is well known, a long period of infancy is valuable, first, in giving time for educative influences to work upon the plastic brain and in making

possible thereby a high development of the mind, and, second, in making necessary a greater degree of parental co-operation than is the case among the lower animals in caring for the young, who are dependent, in the case of human beings, for several years at least. Thus, according to Fiske, a long, helpless human infancy manifests its purpose in the resulting development of the domestic virtues, and in the general education of each new generation which is made possible by a long period of plasticity. The unknown author of the essay in *The Friend's Annual*, after discussing the relatively short infancy of most forms of animal life, and the lack of any high degree of parental care except in the higher forms of life, turns to man, and in the following sentences embodies the gist of both points made by Fiske:

"Thus gracious hath Providence been to man, in rendering the ties of parental and filial affection so much more permanent in this His noblest work, than in any of His inferior creatures. And this is, in itself, a sufficient answer to the objections and complaints of those ancient and modern philosophers (Pliny and Buffon), who have delighted to vilify human nature, on account of the helpless condition of man in his state of infancy and childhood; because this very helplessness, by demanding the constant and long-continued attention of parents, gives rise to, and renders habitual, the tender charities of domestic and social life" (pp. 154-55).

"This helpless condition, then, in which it hath pleased our Maker that we should be introduced in the present state, exhibits many marks of benevolent and wise design. . . . It ought to be regarded with thankfulness, as necessary to the formation of that strong and durable affection between parent and child, which is one distinguishing feature of the human race, and a mark of its superior character" (p. 157).

"But this is also a beneficial and wise appointment in another important respect. It is admirably adapted to the circumstances of man, considered as a rational and moral being, designed to be trained to usefulness in the present life, and to the cultivation of those religious and virtuous habits, by which he is to be fitted for another. It is necessary to such a being, that maturity of understanding and bodily strength should be gradually acquired, by the slow development of his corporeal and mental faculties" (p. 155).

In the writings of Fiske there are to be found ideas which are strikingly similar to portions of V. F.'s essay. For example, compare with the last part of the first paragraph quoted above from V. F. the following from Fiske (*Excursions of an Evolutionist*, p. 316): "Infancy extending over several years must have tended

gradually to strengthen the relationship of the children to the mother, and eventually to both parents, and thus gives rise to the permanent organization of the family."

It does not seem likely that the circulation of *The Friend's Annual* was wide or that a copy was ever seen by Fiske. I have been unable to find another copy than the one in Mr. Robinson's possession. The obvious similarity of thought and expression simply shows how hard it is to be wholly original in the sense of thinking and saying what no one ever thought or said before.

WESLEY RAYMOND WELLS.

LAKE FOREST COLLEGE.

THE TWENTY-FIRST ANNUAL MEETING OF THE AMERICAN PHILOSOPHICAL ASSOCIATION—EASTERN DIVISION

THERE are two kinds of people who attend philosophical meetings: those who go because of the papers to be presented; and those who go in spite of them. Probably by temperament, training or moral convictions most American philosophers belong consistently to one or the other of the two classes. Probably most of them, that is, are impervious alike to disillusionment and to agreeable surprise, and so continue either to regard the programme prepared by the executive committee as the Mecca of the annual pilgrimage; or to deplore it is a necessary evil—something by no means warranting the expenditure of railroad fare. But undoubtedly there is always also a small minority capable of the human grace of change of heart. A few pessimists turn optimistic; a few optimists arrive at the delayed and gloomy conclusion that philosophy in America has gone to the dogs.

If many were moved to unwonted enthusiasm over this year's oblation to the spirit of Philosophy, confirmed cynics will probably insinuate that the fact may be explained as due to the unprecedented brevity of the ceremony. After all, nobody minds even extreme twinges of boredom or of pain provided they be brief enough; and to be served with but three formal sessions, duly punctuated by unusually delightful social gatherings, might create the illusion of enjoyment merely by contrast with the prolonged boredom to which one was accustomed. Any defender of the Poughkeepsie sessions would have to admit that they were brief. But he would still maintain that they were also intrinsically interesting and important. Presumably the chief task of the present

reviewer is to indicate what there was about the twenty-first congregation of philosophers to call for special praise.

There were ten papers promised, nine given, and the first ground for favorable comment on so limited a programme was the variety of the interests represented. The list of topics dealt with in the papers themselves included: the nature of religion, the nature of the good, the nature of a physical thing, the nature of philosophy. Subjects as wide asunder as Kemp Smith's commentary on Kant and the superstitions of popular philosophy were criticized; while by one writer the concept of civilization, by another, the concept of experience was displayed for analysis. In the course of the discussion attendant upon the formal presentations, the points of view of absolute idealism, of extreme pragmatism, of moderated pragmatism, of positivism, of agnosticism, and of several degrees of realism were picturesquely exemplified. The papers would have possessed some value if they had done no more than thus demonstrate the actual range of current philosophical opinion.

What might have been supposed to rank among the less significant of the contributions proved one of the most brilliant—Professor Meiklejohn's remarks on Smith's *Commentary*. If commentaries themselves savor of the parasitic—subsisting, vulture-like upon the carcasses of other men's ideas—a commentary upon a commentary should be but the parasite of a parasite. But, at least in the case of Professor Meiklejohn's acute and epigrammatic criticism, the double negative took on the character of a genuine positive. The paper was important not as an elicitor of wide and varied discussion—it was replied to merely by Professor Cohen—but as a little gem of analysis and exposition. Esthetically, it had the effect of a philosophical lyric, if one will grant the substitution of logical for poetical poignancy, and dialectical cohesion for a merely emotional unity. By deft manipulation of Kemp Smith's premises, Professor Meiklejohn demonstrated that Smith's attempted annihilation of Kant came to naught, reducing to the protest that Kant didn't mean what he said he meant. He denounced in particular as highly questionable Smith's method of arbitrarily selecting out of a paragraph one set of Kantian propositions, forcibly taken out of context, and rejecting as improper intrusions of a different date another set actually interwoven with the first.

Another paper which fell into the midst of relative silence was that of Professor Cohen on *Myth and Science in Popular Philosophy*. One part of the audience agreed so profoundly with Professor Cohen's contentions that they found nothing to say in the way

of criticism or qualification. Another part experienced such thorough disapproval of the spirit and ultimate implications of what he expressed that nothing short of a pitched battle would have promised satisfaction. It was not a mere sense of the present incompleteness and unwarranted dogmatism of science that Professor Cohen gave voice to. The spirit of his polemic was cynical—as if he felt actual glee in the weaknesses and deficiencies he discovered—and the intention of it seemed to be to throw in question as all equally childish and superstitious the best-grounded hypotheses of modern thought. It was as they concerned the concept of evolution that his comments were perhaps especially to be deplored.

They were to be deplored chiefly for the improper use to which they might be put, all the more dangerous by reason of his own great learning and ingenuity. He was directing his attacks against *all* undue certitude, *all* forms of superstition, and it is certainly not to be supposed that he intended for a moment to lend support to anything like the Mosaic account of creation as an alternative to the Darwinian. And yet there can be no doubt that the popular effect of any somewhat ambiguous criticism of the doctrine of natural selection is always the lamentable one of reinforcing doubt of science from the standpoint of religion. With fanatics in the state of Kentucky bent on controlling biological instruction out of consideration for church dogmas, and with certain otherwise admirable New York papers giving voice to the bigotry of those for whom the theory of organic evolution is an *a priori* impossibility, scientific doubts need to be couched carefully if they would not mislead. As an example of wise caution, the procedure of Professor Bateson in his address on *Evolutionary Faith and Modern Doubts* before the American Association for the Advancement of Science at its December Meeting in Toronto may be cited. He said at the close of his paper: "I have put before you frankly the considerations which have made us agnostic as to the actual mode and processes of evolution. When such confessions are made the enemies of science see their chance. . . . Let us then proclaim in precise and unmistakable language that our faith in evolution is unshaken. Every available line of argument converges on this inevitable conclusion. The obscurantist has nothing to suggest which is worth a moment's attention." Any one in the ranks of science or philosophy failing to make such specific confession of positive faith should take heed lest he be unwittingly counted among the obscurantists rather than as merely an exponent of an esoteric type of skepticism.

The only other paper of the afternoon session with Professor Cohen was that of Professor Montague entitled *The Missing Link in the Case for Utilitarianism*. As always when problems of ethics are introduced, the discussion that followed was fast and furious. The theory put forward was that, whereas Mill rightly felt that there are different kinds of happiness, some being incommensurably superior to others, he need not have abandoned the utilitarian principle that happiness is the sole measure of good, if he had recognized dimensionalities of happiness. This concept of dimensionality, so Professor Montague contended, while doing full justice to the fact that no number of pig contentments could equal a Socratic contentment, still makes possible the avoidance of any other quality than happiness in the hierarchy of goods. The difference, then, between a simple pleasure and virtue would still remain quantitative, one being a good, the other a permanent ground for unlimited further goods. The discussion was participated in by Professors Cohen, Brown, Bakewell, Pratt, Fullerton, and others. Some acute criticisms were offered by Professor Fullerton in particular, and Professors Cohen and Pratt suggested analogies for the elucidation of Professor Montague's theory. It can not, however, be said that the case for utilitarianism was finally settled, one way or the other.

In two other papers at the close of the sessions on the following day the problem of the good was reopened, first by Dr. Stephen Pepper under the title: *Primitive and Standard Value*, and then by Dr. C. E. Ayres in exposition of the theme: *Before Good and Evil: Civilization*. Again there was animated argument, particularly with regard to the point of view apparently shared by the two speakers, that standards of good and evil are quite empirical affairs, the product of group habit and ultimately the outcome of instinctive behavior. Mr. Ayres, in particular, appeared to think that a kind of majority vote was the final criterion of the good. Professors Pratt, Montague and others attacked the notion that standards are devoid of objective validity, as Mr. Pepper had contended, and Professor Overstreet, in a brief but very eloquent speech, set forth what is probably the most defensible view in the whole matter: that the good is not an absolute in the sense in which possibly mathematical truth is, but is relative to consciousness, without, however, being entirely individual and variable. The good, that is, is to be defined by reference to the ideal maximum development of human valuation.

There remain to be considered the first four papers on the programme: that by Professor French on *The Metaphysical Value of*

the Religious Consciousness; that by Professor W. K. Wright on *Situations and Experience*; that by Professor Sellars, entitled *Does a Physical Thing Possess Attributes?* and finally Professor Creighton's paper on the *Form of Philosophical Intelligibility*. This last took us back to the chief topic of the previous annual conference which was mainly concerned with the problem of the nature and function of philosophy. Professor Creighton defended the idealistic standpoint that things can be truly known only in relation to the whole, and that the significant inquiry is as to values rather than existences. He noted the two important points of difference between science and philosophy resulting from these two doctrines, and insisted that it is only by the coöperation of imagination with reason that philosophic knowledge—knowledge of the concrete universal—is made possible.

It was in connection with the discussion of Professor French's paper, however, that the implications of absolute idealism were brought out with most startling clearness by Professor Creighton. Professor French had stated that the essential core of the religious consciousness was the faith that the ideal is real. This had elicited from Professor Montague a violent protest against the confusion of religion and ethics, and an affirmation of the essentially unethical consequence of any religious doctrine to the effect that "all's right with the world." To which Professor Creighton responded that the ethicist was being confused with the reformer—an individual to be tabooed by the truly ethical and religious. Essentially unethical in his opinion is not the regarding of the world as perfect, but rather the regarding of it as anything else—and the consequent striving to make it other than we find it.

This position is of course the traditional one for believers in the absolute, and there was nothing really novel in the defense of it nor yet in the defense of its opposite. What was picturesque and really valuable was the clear-cut presentation of the irreconcilable viewpoints as summed up in the protest and counter-protest from the floor. We are so pervasively occupied in elaborating the minor aspects of our respective philosophies, that it is wholesome and refreshing now and then to see their crucial dogmas baldly exhibited. There was no resolution of the two viewpoints—as there can not be; but at least no ambiguity was left as to the utter opposition between them.

Professor Wright dragged into the arena for reconsideration the pragmatist coupling of situations and experience. Though at first hotly defending an orthodox pragmatic view he finally, under the goad of questioning, expressed a tentatively agnostic attitude

which would be quite unobjectionable to many outside the pragmatic persuasion. A genuinely objective world of values, truths and relations was practically admitted by him as logically implied by the very doctrine of pragmatism itself.

To his own query as to whether physical things possess attributes, Professor Sellars, disclaiming the possible imputation that he spoke for all critical realists, replied in the negative. A lively debate between him and speakers from the floor followed his presentation of the view that what might be called structure—identical, apparently, with space-time predicates—constitutes a so-called physical thing as it is in itself. Professor Fullerton pressed his question as to why any one should be more sure of the objective reality of primary qualities than of secondary; and others variously defended, on the one hand, a more radically realistic view than that promoted by Professor Sellars, and on the other, a more agnostic or subjective. The consensus of opinion seemed to be that mere “structural” entities such as Professor Sellars defended as the stuff of the objective universe, were as highly questionable things as Berkeley had found “substance” to be.

Of the brilliant presidential address by Professor Sheldon entitled *Soul and Matter* there was, of course, no discussion. If there had been opportunity, rather lively debate might have been anticipated. For Professor Sheldon, after a telling enumeration of the kind of considerations which lead to dissatisfaction with traditional materialism, proceeded to defend a doctrine of souls, but souls interpreted after an unusual manner. It was a creed of soul-substance that we were offered; not, however, a soul-substance divisible and capable of taking on varying configurations. The soul, according to Professor Sheldon, must be regarded as possessing at once all the attributes it would possess as a material thing and as a psychical—in other words, it is a psychic substance, a kind of monad, an ultimate, indivisible, spiritual unit which is yet a genuine substance and in no wise a mere form or force.

The annual dinner which preceded the President’s address took place in Main Hall of Vassar College where all meals were served to members of the Association, and where likewise the reception given by President and Mrs. McCracken was held on the first evening. Very much was gained in the way of comfort and informality by having the association housed in one building, with only a few steps to take to Rockefeller Hall where the formal meetings took place. There was consequently ample opportunity for that intimate interchange of ideas which to many affords more pleasure and profit than does any amount of public discussion. Probably

few if any permanent conversions from one philosophic allegiance to another ever occur in this way, but at least sometimes there takes place an enlargement of vision in which the splendid range and variety of possible viewpoints becomes manifest. Effort after sympathetic envisagement of theories opposed to one's own then ceases to be distasteful, since truth is seen to be something far less simple and easy than an affirmation of one creed or its bare contradiction. Perhaps this recognition of a reality so rich that it generates a multiplicity of doctrines is more than anything else the goal of philosophic convocation.

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BOOK REVIEWS

The Principles of Sociology. EDWARD ALSWORTH ROSS. New York: The Century Company. 1920. Pp. xviii + 708.

In a letter published by Professor Ross as a foreword to his *Sin and Society* in 1907, Theodore Roosevelt said: "It is to Justice Holmes that I owed the pleasure and profit of reading your book on Social Control. The Justice spoke of it to me as one of the strongest and most striking presentations of the subject he had ever seen." A writer to whom Justice Holmes and Theodore Roosevelt, not to mention a host of others, acknowledge their debt may justly lay claim to being a power in the intellectual life of America. By all that large public, therefore, who have known Professor Ross through his *Social Control*, *Social Psychology*, *Sin and Society*, *Changing America*, not to mention his *Changing Chinese* and *South of Panama*, this, his latest and most ambitious work, will be gratefully received.

The Principles of Sociology is a bulky volume of over seven hundred pages and is evidently intended to be the author's magnum opus. We are told that he was seventeen years in gathering the material through a first-hand study of conditions in China, Russia, South America and the United States while three and one half years were occupied with the actual writing of the book. The book shows those qualities that made for the success of Professor Ross's earlier works, namely, marvellous *Belesenheit*, a wealth of interesting illustrative material amassed by a keen and far-traveled observer, a zeal for facts combined with a phobia for the philosophical and a style which in journalistic vividness hardly attains the level of earlier works such as *Sin and Society*.

William James, in a striking characterization of Herbert Spencer's philosophy, calls "his whole system wooden, as if knocked together out of cracked hemlock boards—and yet the half of England wants to bury him in Westminster Abbey. Why?" Because "the noise of facts resounds through all his chapters" (*Pragmatism*, p. 39f.). Ross like Spencer is factually minded. He is most skilful, in selecting striking, interesting and apposite illustrations. If bare, brutal, unvarnished facts could settle all moot questions Professor Ross would be the most convincing of writers, for he is primarily an eager, earnest, indefatigable and for the most part unprejudiced chronicler of social facts as he sees them. He makes small demand upon either the history of thought or the implications of social evolution for the interpretation of these facts. Groups, social forces, class conflicts, social processes are studied as they present themselves in contemporary society. Professor Ross's "system of sociology," in so far as it can be traced, is composed of generalizations deduced from present-day and for the most part American society. Facts are drawn from the treasure house of the past mainly to illustrate and support this pragmatic interpretation of the present. The result is that Professor Ross is forced to adopt in many instances short-handed not to say dogmatic solutions of moot questions. The absence of any comprehensive principle of interpretation likewise places the writer more or less at the mercy of the welter of factual details. This appears in the tendency to multiply social principles and processes. Part three, which contains two thirds of the book, enumerates some thirty-odd distinct social processes which are discussed in as many chapters.

The book seeks to be comprehensive. Professor Ross tells us that his work contains "a system of sociology" where "system" is used in the philosophical sense of "a way of making some aspect of reality intelligible." The book acquires an ethical flavor when the writer avows "an over-mastering purpose and that is—to better human relations." We detect the note of the social reformer when it is claimed that the book is "intended to help people to arrive at wise decisions as to social policies." The main object of the author however is undoubtedly to present a scientific account of the facts of society. Now all these phases of sociology are important and naturally enlist the interest of students. But from the point of view of methodology the uncritical intermingling of them in a treatise on sociology can hardly further the scientific phase of the subject. In any young and growing science such as sociology it is easy to pass from the rôle of scientist to that of moralist or of social reformer but the effect is confusing. There is possibly a place for

a comprehensive work on sociology that would give us a *synthesis* rather than a *fusion* of these points of view. It is conceivable that a part of such a work could be devoted to the critical and scientific presentation of the facts, another to the theoretical interpretation of these facts either from the metaphysical or the ethical point of view, and still another to suggestions for the social reformer as to the effective combination of fact and ideal in programmes for social betterment. But it is difficult to see how sociology is ever to become a science without keeping clearly in mind the differences between these phases of the subject.

Professor Ross's comprehensive and suggestive book is a *fusion* rather than a *synthesis* of social fact, social theory and social reform. The result is that strict justice is hardly done in the book to either one of these phases of the subject. Let us consider for a moment Ross's place in and his contribution to social theory. This book is the culmination of years of study, embodying the mature conclusions of a scholar of encyclopedic learning and wide experience, yet it adds little or nothing to the theory of society though claiming to be "a system of sociology." There are to be sure abundant evidences that Professor Ross has in the background of his thought, though implicit and fragmentary, the makings of a philosophy of society. But this "system" contains little not found in his contemporaries or predecessors. For Ross, together with the majority of American sociologists, leans towards a voluntaristic conception of society as opposed to the intellectualism of Comte and the biological materialism of Spencer. To be sure earlier writers such as Ward and Giddings were profoundly influenced by Spencer but drew away from him towards a more voluntaristic point of view. Ward, who was the dean of American sociologists, broke with Spencer when he insisted that the state, which to Spencer was anathema, is the brain of society and conceived of sociology as the science dealing primarily with the evolution of the social will. For Giddings society is not, as Spencer asserted, an organism but an organization of a number of individuals who by virtue of their "like-mindedness" embody a common will. But neither Ward nor Giddings quite emancipated themselves from Spencer's influence. Ward, who brought to sociology the training and mental attitude of the paleobotanist, found "almost as many parallels between social and chemical processes as there are between sociology and biology" (*Pure Sociology*, p. 71), while Giddings was wedded to the materialistic monism of Spencer. "All social energy" he tells us, "is transmuted physical energy . . . the original causes of social evolution are the processes of physical equilibration which are seen in the integration of matter and the dissipation of motion"

(Giddings, *Principles of Sociology*, pp. 363f.). A decided impetus towards a more psychological and voluntaristic conception of society was given by Professor Small with his doctrine of interests suggested by Ratzenhofer. To resolve all social forces back into interests, as does Small, to find in interests the clue to social evolution and the key to social problems is to plant sociology firmly upon a psychological and voluntaristic basis. Civilization thus becomes synonymous with socialization, culture a matter of the disciplining of elementary human nature rather than of the conquest of natural forces. Out of these basic "interests" arise the social ends that condition society and social progress becomes a matter of the criticism, the evaluation and the realization of these ends. It is thus a distinct contribution on the part of Professor Small to have introduced the idea of value into sociology and in particular to have stressed the intimate connection between sociology and ethics. Small's contribution suffers however from the vagueness inseparable from the idea of interest, a term too broad, too many-sided and too unscientific to provide a satisfactory basis for the science of sociology, a fact which Small seems to recognize in his later work *The Meaning of Social Science*, where interest is no longer emphasized.

Professor Ross, with his facile pen, his large reading public and his wide learning, is admirably equipped to give final formulation to the drift of sociological thought in this country. He is evidently in sympathy with these voluntaristic and psychological tendencies in American Sociology. "The immediate causes of social phenomena," he says, "are to be sought in human minds . . . nothing is gained by viewing them as a manifestation of cosmic energy" (p. 41). Following McDougall, he finds that the instincts "are the mental forces which maintain and shape all the life of individuals and of societies" (p. 42). The instincts or "original social forces" give rise to "derivative social forces" or "interests." We look in vain in the work however for an elaboration of these suggestions into anything bearing a resemblance to a philosophy of society, nor do we find such a system in Ross's other works. In the discussion of the genesis of society (ch. ix), for example, we would expect some attempt to point out the relation of the social forces of instinct and interest to the differentiation of the social process into groups. (Professor Ellwood has done this in suggestive fashion in his *Sociology in its Psychological Aspects*, Ch. VII, "The Origin of Society"). This Ross does not attempt and thus leaves us without any adequate explanation of the why or the how of the vast proliferations that have characterized the social process from its very inception. Owing to

this distrust of the speculative and theoretical and in spite of the imposing array of terms and principles to describe social phenomena the book often gives the impression that we are still dealing with the impulses, contacts and interests of individuals. The writer fails to impress upon the reader that there is a social as opposed to an individual reality, as is done so skilfully in the works of Cooley. Even in the last part, devoted to "sociological principles," these principles are merely generalizations drawn from the facts. There is little attempt to relate these principles to each other or to a general voluntaristic point of view. The discussion of "Anticipation" (ch. 44), for example, a characterization of the growing purposefulness of society, is obviously related to the teleological implications of the basic social forces of instinct and interest and yet no attempt is made to indicate this relation. The last principle of "Balance" (ch. 47), defined as follows: "In the guidance of society each social element should share according to the intelligence and public spirit of its members *and none should dominate*" (p. 693), is a meaningless truism without further light as to our ideal of what society should be. This unwillingness to think things through even at the risk of landing in philosophy makes the book often tedious reading in spite of its wealth of concrete and piquant details.

Ross's *Principles of Sociology* will hardly take its place as a permanent contribution to social theory, it will hardly be in demand as a compendium of social facts scientifically arranged nor yet as a handbook for the reformer, though philosopher, scientist and reformer may find here both information and inspiration. The book will be prized for its wealth of information, its suggestive insights into phases of social reality and its vivid style. It is a question, however, whether Professor Ross's fame will not be furthered less by this bulky volume than by his earlier more incisive if less ambitious writings such as *Social Control*, *Sin and Society* and *Changing America*. It may be that his most lasting contribution will not be as a social philosopher but rather as the brilliant analyst of a changing world order and the fearless castigator of our modern high-power sinners.

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General Principle of Relativity: H. W. CARR. London: Macmillan & Co. 1920.

Space and Time in Contemporary Physics: MORITZ SCHLICK. Translated by H. L. Brose. Oxford University Press. 1920.

On Gravitation and Relativity: R. A. SAMPSON. (The Halley Lecture.) Oxford University Press. 1920.

Carr states in his preface that he deals only with the philosophical and historical aspects of the principle of relativity (the main ideas were developed in a course of lectures on "Historical Theories of Space, Time and Movement," delivered at King's College in the spring of 1920); but in fact, as one reads the book, one finds that a large proportion of it is actually devoted to an exposition, of course in popular language, of the mathematical and physical aspects of the Einstein theory, mainly the special theory of relativity.

This exposition is well written, but it will hardly make the theory clear to a reader who is not already familiar with it; and a number of actual misstatements can be pointed out. On page 35 it is stated that "in an infinite series no two members are next one another, for between any two there is always another." This is stated as a general proposition and of course is not true; some infinite sets have next members like the series of integers. Others do not enjoy this property like the continuum of points of a line.

On page 138 the author is evidently confused by the concept of *event*, since he talks about an infinite set of events as if it were a single event, which is just as bad as not differentiating between a single point and a curve.

The statement on page 77 dealing with the Einstein principle of *equivalence* refers merely to the trivial fact that when *A* moves toward *B*, *B* may be regarded as moving toward *A*; the true principle in fact has nothing to do with the special theory of relativity but deals with the connection between gravitation fields and acceleration fields.

The best part of the book is the historical accounts of "Atoms and the Voids" in Chapter 3 and of the "Vortex Theory" in Chapter 4, precisely the parts that have least to do with Einstein.

The general theory of relativity which is at the basis of Einstein's solution of the problem of gravitation is hardly touched on by the author—in spite of the title of the book. The concepts of curvilinear coördinates, curvature, and tensor, can not be grasped without a good deal of serious mathematical thinking, and without them it is impossible to understand the Einstein theory.

The last chapter of Carr is entitled "In What Sense is the Universe Infinite?" It does not make clear the fundamental fact that we must distinguish between the infinity of space and the unboundedness of space. This essential point is very well presented in the ninth chapter of Schlick's book (a chapter added to the second edition). Another fine chapter of Schlick's deals with the "Inseparability of Geometry and Physics in Experience." On page 73, however, the

reader is left entirely in the dark as to the distinction between spherical and elliptical spaces. If the reader relies on etymology or what he has picked up in elementary college mathematics, he is bound to have an entirely false impression of the true state of affairs and Sehliek's discussion will not help him out of his difficulty. Sehliek goes much further than Carr in both mathematics and physics, but neither goes far enough to reach a clear statement of Einstein's law of gravitation.

Sampson's brief lecture is more interesting for its classical quotations and sarcastic point of view than for the light it throws on Einstein.

For the philosopher who wishes to get in closer contact with relativity, the reviewer would recommend Einstein's popular book, Eddington's *Space, Time and Gravitation*, and Born's *Relativitätstheorie Einsteins*. For the mathematical reader, who wishes to reach the fundamentals, there is no rival to Weyl's *Raum, Zeit, Materie*, which has not yet been translated into English. (Weyl and Eddington have now been translated into French, with valuable additional material.) The most interesting exposition of Einstein written by a philosopher, is that contained in Viscount Haldane's new book, *The Reign of Relativity*, his attitude toward mathematics being finely expressed as follows:

"What I have ventured to say must be taken as pretending to record no more than it does, the impressions of a non-mathematician about what the mathematicians are saying to each other when they enter the borderland of philosophy and speak about it among themselves. The impression is that of a stranger in whose presence they talk, but who, although keenly interested in learning from them, is but imperfectly acquainted with a language which to them is one of second nature. They may, therefore, be gentle with him if his accent seems strange and his capacity to do justice to their words appears inadequate. His reason for listening and in his turn making comments does not appear to be an irrelevant one. They are in a territory that is occupied in common, and forbearance on both sides is therefore necessary. I do not believe that the fundamental conceptions are as obscure as some of the mathematicians take them to be. The reason they seem so is that they are concerned with matters which involve consideration of a more than merely mathematical character. For the rest I am not lacking in admiration for the splendid power of the instruments the mathematicians possess, and the wonderful results they have achieved with them; instruments which impress me not the less because it is beyond my powers to wield them."

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JOURNALS AND NEW BOOKS

THE AMERICAN JOURNAL OF PSYCHOLOGY. October, 1921. *The Stimulus Error* (pp. 449-471): EDWIN G. BORING.—Recent researches have shown that the observational attitude toward the stimulus may lead to equivocal correlations of stimulus and response that are unscientific. In the two-point limen experiments the use of introspective data is advocated. *The Illusory Perception of Movement on the Skin* (pp. 472-489): ANNA KEELMAN WHITCHURCH.—The perception of cutaneous movement was obtained by the successive stimulation of two separate points with optimum results for durations of 150 sigma and an interval of 100 sigma. *Some Qualitative Aspects of Bitonal Complexes* (pp. 490-518): CARROLL C. PRATT.—After a defining of smooth, simple, complex, homi-sonorousness and other terms used in describing bitonal presentations, agreement was noted in the reports on the octave, fifth, fourth, tritone, sevenths and seconds, while there was much divergence for the thirds and sixths. *On Arterial Expansion* (pp. 516-518): G. N. HARTMAN AND D. L. McDONOUGH.—The combination of the sphygmomanometer with the plethysmograph appears to give a better determination of arterial elasticity than does the present medical clinical method. *Functional Psychology and Psychology of Act* (pp. 518-542): E. B. TITCHENER.—Functional Psychology has its roots in the Aristotelian empiricism and has taken on color from many of the related sciences without adopting the modern conception of science. *Church History and Psychology of Religion* (pp. 543-551): PIERCE BUTLER.—Modern psychology, if it were more descriptive, could be of great service to religious history. The religious genius, his disciples, and the adherents to the system, all need psychological study. *Death-Psychology of Historical Personages* (pp. 552-556): ARTHUR MACDONALD.—The fear of death disappears as death comes on. 794 death-bed experiences are tabulated and described. *Minor Studies from the Psychological Laboratory of Yale University. An Experiment in Time Estimation Using Different Interpolations* (pp. 556-562): LLEWELLYN T. SPENCER.—Reproduction gives more accurate results than a statement in terms of standard unit. *Minor Studies from the Psychological Laboratory of Cornell University. The Involuntary Response to Pleasantness* (pp. 563-570): G. H. CORWIN.—Pleasant stimuli produce relaxation with a certain degree of expansion and pursuit on their withdrawal when intensely pleasant. *The Integration of Punctiform Warmth and Pain* (pp. 571-574): R. S. MALMUD.—Warmth and pressure may fuse but this fusion never gives the impression of wetness. *Book Reviews* (pp. 575-587): Wilhelm

Weindt, *Erlebtes und Erkanntes*. E. B. T. *L'année psychologique*: H. P. W. Margarete Hamburger, *Vom Organismus der Sprache und von der Sprache des Dichters. Zur Systematik der Sprachprobleme*: J. GLEASON. O. Lipman, *Abzählende Methoden und ihre Verwendung in der psychologischen Statistik*: L. B. HOISINGTON. Frank Tannenbaum, *The Labor Movement*: H. G. BISHOP. Carveth Read, *The Origin of Man*: W. B. PILLSBURY. Charles Pratt, *The Psychology of Thought and Feeling*: W. B. PILLSBURY. *Psychological Periodicals*. Brief reviews of the following are presented: *Zeitschrift für Psychologie*, Bd. xxxiv-lxxxvii. *Archiv für die gesamte Psychologie*, Bd. xxxix-xl. *Psychological Review*, Vol. xxvii, Nos. 1-6, Vol. xxviii, No. 1. Notes. *On the Plan of the Physiologische Psychologie*: E. B. T. *Experimental Psychology in Italy*: E. B. T. *The Psychophysiology of the Condemned*: E. B. T. *Locomotion of Insects*: E. C. S. George Trumball Ladd: E. B. T. *Index*.

Keyser, Cassius J. *Mathematical Philosophy: A Study of Fate and Freedom*. Lectures for Educated Laymen. New York: E. P. Dutton & Co. 1922. Pp. 466.

NOTES AND NEWS

The first volume of a series of translations and reprints, to be known as *Psychology Classics*, will shortly appear. The series is to be edited by Knight Dunlap, and published by the Williams & Wilkins Company in Baltimore. The first volume, which is now in press, contains a translation, by Miss Istar A. Haupt, of Lange's monograph on *The Emotions*, with reprintings of James's article "What is an Emotion?" from *Mind*, and his chapter on "The Emotions" from the *Principles of Psychology*. In order to facilitate the preparation of future translations and reprints, the royalties from these volumes, together with an equal amount contributed by the Williams & Wilkins Company, will be deposited with the Treasurer of the Johns Hopkins University, the fund so constituted to be used solely for the defraying of clerical and other necessary expenses of such preparation. The editor requests suggestions concerning future volumes, and coöperation in their production.

Professor William Ernest Hocking, Alford professor of natural religion, moral philosophy and civil polity, and Professor Alfred Marston Tozzer, professor of anthropology, have been appointed the professors from Harvard University for the second half of the year 1922-23 under the exchange agreement between Harvard and the Western Colleges.

THE JOURNAL OF PHILOSOPHY

THE IMPLICIT DUALITY OF THINKING

IN psychology as in politics it often happens that the dust of conflict obscures the fact that the contending parties hold doctrines in common which are more important than the points at which they differ. Such is the case in the problem of the origin of thinking. All parties to the controversy can be brought to agree on a matter which dwarfs the issue between them, but which has received only scattering recognition. Whether the basis of thought is in images, or in conflicting motor responses, or in language reactions, the fact remains that thinking is always implicitly dual, and that this implicit duality of thinking ought to be taken into account in every philosophical world-view.

I

It is not difficult to bring this out if one takes the view that thinking is essentially a process of relations or interactions of images—the class of images being not otherwise specified. Every one admits that perception is selective; I perceive an object always in a milieu, against a background. The background, while I may pay no attention to it as such, is the indispensable condition of my seeing the object. If at any moment I widen my field of vision, I then include something which a moment ago belonged to the background; but there is at the new moment a residual or a new background, which is the condition of my seeing what lies within the new field. The point is, not that I actually see the background at any moment, but that I am able to see it; the duality is not explicit, but implicit. We may say that at any moment I see an object, *a*, by reason of the fact that I am able to see a background, *not-a*. Professor Sheldon has mentioned this fact, which might serve as a psychological starting-point for a metaphysical discussion of duality. As he puts it,

Human attention is selective; we fix the eye on one spot and the surroundings pass more or less out of the visual field. But we do not thereby deny the actuality of what is beyond the fringe of vision. We ignore it, we exclude it from *our* sight, but there is objectively no exclusion. Here is a matter whose importance, so far as we know, philosophers have never recognized. They are wont to justify their exclusive partisanship by re-

ferring to the narrowness of the field of attention; but they altogether overlook the fact that this narrowness is not at all of a denying sort, but is just an ignoring. . . .¹

He does not, however, develop this into a psychological approach to the problems of duality—a line of approach which the present paper aims to explore.

The first step, according to the view we are now considering, is that from perceptions to images. It is not necessary, for our purposes, to become involved in the interminable discussions at this point—for, if one admits at all the existence of images, one is obliged to admit that they are distinguished just as perceptions are distinguished, in the midst of their attending conditions. Every theory of attention and even of consciousness² implies this duality; the wonder is that a fact which is so plain in psychology can have been so easily underestimated in logic and metaphysics. If we say that thinking is a play of images, we ought to keep consistently to the principle that every thought-image, *a'*, implies a possibility of thinking *not-a'*. But it is of course true that many now hold that thinking ought to be described in other terms than those of a play of images.

When one turns to these recent writers, it is not difficult to see that for those who regard thinking as the result of a hesitation or conflict between rival motor responses or tendencies, it must be an affair of dualities. According to Professor Dewey, "Thinking takes its departure from specific conflicts in experience that occasion perplexity and trouble."³ It should be noted that it is the duality implied in this starting-point of thinking which chiefly concerns us; Dewey often emphasizes a duality which from our present point of view is subordinate. Thus he says,

The conflicting situation inevitably polarizes or dichotomizes itself. There is somewhat which is untouched in the contention of incompatibles. There is something which remains secure, unquestioned. On the other hand, there are elements which are rendered doubtful and precarious. This gives the framework of the general distribution of the field into "facts," the given, the presented, the Datum; and ideas, the ideal, the conceived, the Thought.⁴

Such a dichotomy may be developed in each of the rival tendencies, in the course of the "location and definition"⁵ of the "felt diffi-

¹ *Strife of Systems and Productive Duality* (1918), pp. 475-476.

² James, *Principles of Psychology* (1890), Vol. I, p. 139.

³ *Reconstruction in Philosophy* (1920), p. 138.

⁴ *Studies in Logical Theory* (1903), p. 50.

⁵ *How We Think* (1910), ch. VI.

culty," or the "development by reasoning of the bearings of the suggestion." But the fundamental duality is found in the fact that diverse anticipated ends may provoke *divided and competing present reactions*; the organism may be torn between different courses, each interfering with the completion of the other. This intra-organic pulling and hauling, this strife of active tendencies is a genuine phenomenon.⁶

Thinking thus comes to be viewed as a special case of the inhibition of certain reflexes by other antagonistic reflexes.

This condition of implicit duality is not essentially altered if one adopts the view of Professor Watson that thinking is a result of language habits, although, owing to later substitutions, it need not always take place in terms of words;⁷ for language itself involves an act of selective attention on the part of the speaker, and an attempt to secure an act of selective attention on the part of a listener. Its motivation, from the animal cry all the way to the most highly developed type of discourse, is the partial or complete transfer of a selective adjustment from one member of a group to another member or other members. In its developed forms its function is often to throw the weight of the speaker's experience to one or another of the competing tendencies of the listener.

Articulate language, and above all the language of philosophical discussion, differs so much from animal cries that it is easy to lose sight of inherent limitations of this kind; but detailed consideration of these differences shows, we think, that these limitations persist. The first difference between animal cries and articulate language is in the fact that in the latter parts of speech have been developed, and expression is in the form of more or less complete sentences. This development, in the sub-human and human groups, can be reconstructed with a good deal of plausibility if one pictures a progressive series of separations from the objects which are of interest to the groups and the actions in which the groups are engaged. For the animal group, we may suppose that the objects and actions are present, and factors of immediate experience. When the objects are thus present, and actions upon them are in the attention of every member of the group, there is no need of an elaborate language reaction; if any sound at all is required to reinforce gestures, it is sufficient to give the sound corresponding to that which in a human group would be known to us as an interjection, a demonstrative pronoun, or an imperative.⁸ We may suppose, further, that

⁶ *Essays in Experimental Logic* (1916), p. 366. Italics mine.

⁷ *Behavior* (1914), ch. X.

⁸ In this and the preceding paragraph I am under some obligation to Professor Pierre Janet, whose very suggestive lectures I heard in 1912.

sometimes while the object is still present, attention is to be directed to it in some specific way, or that while the action is still current, it is to be modified without being terminated; these situations would call forth signs corresponding to our adjectives and adverbs. Somewhere here, we suppose, is one of the differences between sub-human and human groups—the latter are of course able to react much more easily to this type of situation. The difference is still more marked in the next type to be considered, in which the object is absent or out of attention, or the action has given place to some other action; the object must now be named, or the action specified—hence the appearance in language of nouns and verbs. In some such way, we may suppose, the primitive tendencies which issue as cries are expanded into articulated sentences. The sentence is “the significant unit of language,”⁹ and results from the discharge of a nervous reflex. But nothing in the structure of a grammatical sentence does away with the original implicit duality. We may say that every sentence of the simple types thus far considered is spoken as the result of a selective adjustment or conflict of tendencies, and has the effect of a transfer of tendencies from a speaker to a listener. Language for us consists principally of sentences containing nouns, verbs, adjectives and adverbs, the status of which is not changed when they are called by their logical names of terms, relations and qualities.

Other differences between the sentences used by primitive men and those used at the later stages of culture are found in the facts that the later stages are marked by abstractions, generalizations, and the metaphorical use of terms. An abstraction may be defined as the use of a term in something less than its full complement of qualities or relations, or the use of a quality or relation apart from its term. Generalization is, as Dewey says, the positive side of the same function;¹⁰ it is the use of a term, or relation, or quality, in a setting other than that from which it was derived, and often with an implicit reference which goes beyond any setting that has been specified. The metaphorical use of terms involves the substitution of one group of relations for another group, often only remotely resembling the first. All these processes are variations in the use of terms, relations, and qualities, but they do not affect the fundamental conditions by which terms, relations, and qualities become evident to us.

According to Dewey a false abstractionism results when the func-

⁹ Cf. B. Bosanquet, *Logio* (1888), Vol. I, p. 40.

¹⁰ *Reconstruction in Philosophy* (1920), p. 151.

tion of the detached fragments is forgotten.¹¹ We should add that a still more fundamental route to a false abstractionism would be to forget the function of the language reflex and the thinking process, and that any attempt to perform an abstraction which removes the content of our thinking from the conditions of implicit duality in which it originates is false because, regardless of its content, it remains in origin and form still subject to the conditions which it attempts to deny.

More misleading even than false abstractions are the false generalizations which often seem, and sometimes profess, to remove the content of our thinking from the conditions of implicit duality. It is true that generalizations often have a reference which extends indefinitely beyond the settings in which they originate or are employed. There may be no fixed limit to the applications of generalizations about redness, for example, or justice. But the very condition of generalizing at all is that one is able to contrast redness with not-redness, or justice with not-justice; and the only thoroughly valid generalizations are those that recognize the fundamental importance of such contrasts. It is by this recognition that generalizations like the law of contradiction and the principle of the implicit duality of thinking are able to save themselves from the criticism which they are entitled to make of other notions.

It is obvious that the remaining difference, as above noted, between primitive and highly developed language, namely, the metaphorical use of terms, with its substitution of one group of relations for another, is a secondary rather than a primary process, and has to do with variations of the content of sentences or judgments rather than with their form. We may say, then, that the more highly developed language reactions, like the primitive language reactions, conform to the principle of implicit duality. There is some question as to whether thinking originates in language reactions; but there is no question that much of our most significant thinking proceeds in language forms. The point for us is that whatever portion of our thinking takes place in language forms may be regarded as implicitly dual; and—summing up now all that has been said up to this point—that whether the language reaction theory or any other theory of the origin of thinking now current is adopted, the same result as regards implicit duality is reached.

II

The generalization with which we are now concerned is to the effect that, if what is implicit in them were made explicit, all state-

¹¹ *Ibid.*, p. 150.

ments would be reduced to the form "*a*' as against *not-a*'." Recognition of this principle would modify a number of ideas employed in philosophical discussions, both of the past and present; to some of these ideas we now turn.

The first point to notice is that at any particular moment there are marked differences between *a*' and *not-a*'. They may be said to be mutually exclusive—although this statement may have to be qualified later, when more adequate account is taken of the work of Sheldon.¹² For our present purposes it will suffice to say that no matter how trivial in content the term *a*' may be, it, together with *not-a*', exhausts the possibilities of the universe. Sometimes the contrast between the two terms cuts through the midst of our experience, as when, for example, we say "life" and "not-life," or "true" and "not-true." At other times the contrast between the two terms marks the very limits of knowledge—it is in fact only another way of saying that our knowledge is limited. The most picturesque example of the limits of our knowledge is one which is sometimes mentioned in more or less popular writings on astronomy, when one attempts to say what lies outside the universe which astronomy investigates. The answer is, the Beyond. Now of such a Beyond we know nothing, except that it is there—and the term "nothing" is a synonym for such "there-ness." "Nothing" does not mean the absence of everything, nor even the absence of everything relevant to the subject of interest or discussion; for the presence and relevance of things not otherwise taken into account is, according to the principle of the duality of thinking, basic and indispensable. Another way of stating the principle would be to say that everything is present, and relevant. Nor is "nothing" essentially the sign of a substitution,¹³ nor of the absence of a sought-for reality whenever we find the presence of another;¹⁴ these are but special cases, in which the limits of knowledge, more or less self-imposed, are capable of being extended at the next moment. "Nothing" is, in general, whether one is dealing with the limits of thinking or not, the term which denotes that at any moment there are some conditions which remain, at least until the next moment, unanalyzed. It is the term for the that-ness which at any moment excludes what-ness—for external relations which at any moment exclude internal relations. We may point to it, but we can not analyze it, nor can we discuss it except in negatives. For us it is denotative, and not connotative.

¹² *Strife of Systems*, Chapters XII and XIII.

¹³ H. Bergson, *Creative Evolution*, tr. Mitchell (1911), p. 283.

¹⁴ *Ibid.*, p. 273.

One can say of Kant, without intending any disrespect, that his *Ding an Sich* was the limiting case of "nothing."

We can not understand the possibility of such noumena, and whatever lies beyond the sphere of phenomena is (to us) empty. . . . The concept of a noumenon is, therefore, merely limitative and intended to keep the claims of sensibility within proper bounds; therefore it is of negative use only. But it is not a mere arbitrary fiction, but closely connected with the limitation of sensibility, though incapable of adding anything positive to the sphere of the senses. . . . Our understanding thus acquires a kind of negative extension. . . . In doing this it immediately proceeds to prescribe limits to itself by admitting that it can not know these noumena by means of the categories but can only think of them under the name of something unknown.¹⁵

And recognition of the principle of the implicit duality of thinking, with its contrast of connotative and denotative knowledge, would account for later attempts to approach the Absolute, the Unconditioned and the Unknowable, although it would not necessarily justify the detailed construction of such systems. In particular, as here presented, it avoids the duality of subject and object.

Of contemporary writers the one who is most at variance with the idea of "nothing" as above treated is Professor Bradley. Although forced, by what we should interpret as the working of the principle of implicit duality of thinking, to make a distinction between truth and reality, Bradley maintains that in reality this duality eventually disappears. Truth differs from reality in that, for the former, "there remains always something outside and other than the predicate, so the predicate may be called conditional."¹⁶ But reality is not subjected to any such outstanding condition—for any added reality would be simply "more of the same."¹⁷ "An outlying field is here unmeaning."¹⁸

Since our positive knowledge is here all-embracing, it can rest on nothing external. Outside this knowledge there is not so much as an empty space in which our impotence could fall. . . . The opposite of reality is not privation but absolute nothingness.¹⁹

Once more:

It is senseless to attempt to go beyond [the known area of the universe] and to assume fields which lie outside the ultimate nature of reality. If there were any reality quite beyond our knowledge we could in

¹⁵ *Critique of Pure Reason*, tr. Muller (1915), pp. 208-209.

¹⁶ *Appearance and Reality* (1893), p. 544.

¹⁷ *Ibid.*, p. 536.

¹⁸ *Ibid.*, p. 537.

¹⁹ *Ibid.*, p. 537.

no sense be aware of it; and if we were quite ignorant of it we could hardly suggest that our ignorance conceals it. And thus in the end what we know and what is real must be coextensive and assuredly outside of this nothing is possible.²⁰

The principle of implicit duality of thinking, if applied in criticism of Bradley, would indicate that there is a difference between false contradictions and true ones; the latter are those based upon the distinction between the connotative and the denotative components of our knowledge. When this distinction is recognized, it is seen that ignorance is not at all inconsistent with awareness, and that an "outlying field" is anything but unmeaning. We may even admit that our positive knowledge rests upon "nothing external," but we regard this expression as a true substantive, and as the equivalent of a "something external" which is not otherwise specified. We should say that there may at any time be additions to our world; but to go further, and say that they will be "more of the same" would be to apply connotative standards gratuitously and arbitrarily to what as yet we know only denotatively.

Of all the attempts made to qualify the realms beyond the limits of knowledge, one of the most common is found in the term "infinite." It will be remembered to what formidable length Royce built up from Dedekind's conception of the infinite, his argument that the Absolute is self-representing.²¹ Sheldon has shown that when infinity is thus taken to be that which can be put into one-one correspondence with its own part,

the only reason why the part has always enough in it to furnish a correspondent for every new element discovered in the whole is that the part itself has an endless (*i.e., infinite*) number of elements. . . . The notion of . . . ever new elements to draw upon in order to eke out the correspondence is not deduced from the notion of correspondence.²²

Sheldon goes on to explain the contradiction in terms of the indispensable duality of internal and external relations; it seems to us, however, that discussions of the infinite which imply duality may be stated more simply if put not so much in logical, as in psychological terms. Perhaps the degree to which psychological elements persist in the term "infinite" is not always adequately recognized.

From a psychological standpoint it would be plain that an infinite regress is not to be identified with regress to an infinite; the first expression refers essentially to an effort or a progress, the second to its completion. But the infinite is not the final term of a

²⁰ *Ibid.*, p. 516.

²¹ *The World and the Individual*, First Series (1900), p. 510 ff.

²² *Strife of Systems*, p. 431.

series; it is a word used either to describe the act of proceeding in a series or to indicate the fact that the proceeding has been abandoned when it might have been continued. When it is used to describe the act of proceeding in a series, it is synonymous with the word "indefinite," or "indefinitely"; an example is seen when the infinite of the calculus is regarded as "the large-at-will," or the infinitesimal as "the small-at-will"—both of which definitions show how much of psychology adheres to mathematics at these points.

Sometimes the word "infinite" is used in another way, so that it is more easily mistaken for a term; this confusion seems to be involved in the work of Dedekind and the argument of Royce. What actually happens is perhaps more understandable if stated psychologically. Let us say then that there is a progress, sustained for a longer or a shorter period, from one member of a series to the next in a given order, and so on. But in the nature of the case such ordered progress will not be followed out forever; sooner or later one will have other things to do, or one will simply become tired of the monotonous repetition, and abandon it. One indicates that such an abandonment has occurred, by using the term "infinite"; it is the sign that *one does not care* to pursue the detailed series any farther, at least for the present, but that the series may be pursued farther if it is desirable later on. Since the word "infinite" implies that the operation may be resumed, it is easy to confuse it, in a realm where "one does not care," with a term marking the resumption, or even the completion of the series. To say that in the number series the whole may be put into one-one correspondence with one of its parts, is really to say that two series, about the precise extent of both of which one does not care, may be conveniently assumed to be equal in number of terms; but, in a realm where one does not care, any number of other assumptions are equally legitimate.

In other words, the problem of the infinite, like the principle of the implicit duality of thinking, may be approached from the psychological side; and when thus approached, it may be seen that the two are essentially only different ways of stating the same thing, or describing the same fundamental condition. The finite is a connotative, and the infinite is a denotative concept. Anything which is a matter of connotative knowledge we can, if allowance is made for the imperfections of our methods and attainments, analyze and discuss and develop with some show of results; but anything which is a matter of denotative knowledge we can only indicate, or point toward, or qualify by its negative reference to that which is familiar and near at hand. This division of knowledge into connotative and

denotative might be turned to account if there were any call to multiply the literature on the Zenonian puzzles or the Kantian antinomies. According to Professor Montague, "most great antinomies turn on a situation in which the finite as given in perception clashes with the infinite as demanded by conception";²³ we might modify this statement to say that the infinite is less often demanded by conception than implied by both perception and conception.

We may mention briefly one antinomy which seems particularly amenable to treatment in terms of the principle of implicit duality—this is the one which concerns the notions of beginning and ending. Beginning and ending are correlative terms, like parent and child—one always implies the other. A beginning of anything is always the ending of something else, and *vice versa*. The terms are used to mark at any moment the point of contact of our connotative and our denotative knowledge. Sometimes these limits are fixed by the imperfections of our senses or instruments; sometimes they are fixed by convenience, or the interplay of our interests. There is a distinction between our connotative and our denotative knowledge in the fact that of the former we may know both beginnings and endings; of the latter we may know either beginnings or endings, but not both. This is only another way of saying that our connotative knowledge is essentially finite while our denotative knowledge is, in the proper sense of the term, essentially infinite.

III

Let us note very briefly some of the consequences for logic of a view such as the foregoing. Sheldon has emphasized, from the point of view of a dualistic system, the ambiguity in the use of the word "not," which sometimes means the relation of otherness or exclusion between terms, sometimes the denial of a suggested judgment.²⁴ I hope to work out a point or two in this connection in a later paper. The chief point to be noted now is that the law of contradiction ought to be stated in terms of exclusion as well as of denial, and ought to be stated positively as well as negatively. We should say not merely, "It is impossible for the same thing both to be *a*, and not to be *a*," or "*a* is not not-*a*," but also, "*a* is known to be *a*"—or even, "*a* is *a*"—"by reason of its exclusion of not-*a*."

Another consequence for logic follows from the fundamental relativism of the dualistic view. It is that any so-called logical universal has an essentially limited reference, and that, strictly

²³ *The Antinomy and its Implications for Logical Theory*, in *Studies in the History of Ideas* (1918), p. 239.

²⁴ *Strife of Systems*, p. 471.

speaking, the only universals which are valid throughout the whole range of our experience are those which allow for the fact of duality.

IV

In conclusion, let us indicate very briefly some of the effects which a recognition of the principle of the implicit duality of thinking might be expected to exercise upon some of the philosophies current at the present time. It is obvious that recognition of the principle would modify the arguments of absolute idealism in the direction of relativism; there is one idealistic argument, or presupposition, which we should expect would be particularly affected.

This is the point which is perhaps most vital in absolute idealism—that reality and experience are coincident.²⁵ According to the view here put forward, this point might—at least in a sense—be granted, but without leading to the consequences which the absolute idealists draw from it. In other words, if our experience can be thought of as denotative as well as connotative, we may say that reality and experience are coincident, but that there is no need of going beyond our experience to an Absolute experience. One may here quote Royce against Royce:

That all differences rest upon an underlying unity . . . is the very thesis which . . . we are trying to make more concrete. . . . In knowing Asia, I, in *some* sense, already know these other objects. Even now, I, in *some* sense, mean them all. Whoever denies this, after all, by implication, affirms it.²⁶

The principle of the implicit duality of thinking might be said to have much in common with pragmatism, because it provides room, in the region of denotative knowledge, for indefinite growth. That which is known only denotatively is always at hand to be transformed into that which is known connotatively—no one need weep for more worlds to conquer. The principle need not be thought of as introducing a cleft in reality, for such a cleft as it introduces is constantly shifting, and, normally, shifting in an outward direction. The duality is, as Sheldon has it, productive, and creative. It makes possible a growing cosmos, and growing men.

Taken in connection with neo-realism, the principle of the implicit duality of thinking would help to emphasize how many and how varied are the things which subsist, but to which nothing in the objective world, so far as we know, corresponds. Thinking proceeds by conflicts, antagonisms, inhibitions, repressions; and the mind is

²⁵ Cf. Royce, *The Conception of God* (1902), p. 30 ff., and *The Religious Aspect of Philosophy* (1885), p. 339.

²⁶ *The World and the Individual*, Second Series (1908), pp. 56-57.

the most marvellous of all kaleidoscopes. It may even be that these subsistential things are of more importance than the term "repression" indicates; they may, as for the Freudians, drag the whole mind in their direction, or, as for Professor Santayana, impart to the whole the dimension of ideality.

Any dualistic view is of course a step away from monism, and in the direction of pluralism; and, on the other hand, it is noticeable that a good deal of so-called pluralism is not inconsistent with a fundamental dualism.

One of the most important consequences of the recognition of the principle of the implicit duality of thinking would be that it would make it easier than it has sometimes been made for any one so disposed to point to the limitations, and, as one might go on to say, the insufficiency of ordinary discursive reason, and to insist that there must be some more direct way to reality, which avoids reason's implicit contradictions. Surely, one may say, the contradiction takes place within experience; why may not experience just as easily and just as naturally reconcile it, or transcend it? This is the view which leads toward intuitionism and mysticism. Professor Bergson has one passage which indicates that, for him, intuition might perform such a function.

Concepts . . . generally go together in couples and represent two contraries. There is hardly any concrete reality which can not be observed from two opposing standpoints, which can not consequently be subsumed under two antagonistic concepts. Hence a thesis and an antithesis which we endeavor in vain to reconcile logically. . . . But from the object, seized by intuition, we pass easily in many cases to the two contrary concepts; and as in that way thesis and antithesis can be seen to spring from reality, we grasp at the same time how it is that the two are opposed and how they are reconciled.²⁷

The most notable recent writer on mysticism is Professor Hocking, who also has some passages suggesting that the world which reason dichotomizes may be unified in a way more fundamental and adequate to the needs of life. He says that contrasts disappear in worship—the otherness of God and man ceases to be the whole truth of their relationship.²⁸

Distance without fusion becomes individualistic and sterile; fusion without distance is formless, sentimental and oppressive. We want our living to add to its objectivity this unifying consent. Consent, and that union with the object so curiously uncommandable by direct effort, flows through and around all our deliberate thought-work, lifting and floating

²⁷ *An Introduction to Metaphysics*, tr. Hulme (1912), pp. 39–40.

²⁸ *The Meaning of God in Human Experience* (1912), p. 343.

it on the tide of a more central relationship with our world. Reflective thought, it appears, is too purposive, active, self-distinguishing, self-preserving, and at the same time too individual and unfree in its result, to do justice to the meaning of worship.²⁹

It should be noted that no one should expect direct results from arguing about intuitionism and mysticism, for their presupposition is that all arguments are indirect. And one must expect also, that since the attempt is made in the argument to do justice to what the discursive reason knows only as the denotative, much of the content of such indirect arguments as are forthcoming must be negative and even arbitrary. But at the same time the awkward predicament which embarrasses all anti-intellectualist systems—that of being obliged to employ the intellect to formulate and communicate their views—is partially relieved by the principle of the implicit duality of thinking, with its recognition of denotative knowledge, and its legitimization of certain contradictions.

We have left until the last any connected view of the work of Sheldon, on which we have frequently drawn, and with which we have frequently found ourselves in agreement; the idea in leaving the work until the last has been that in connection with it we might mark a transition to a possible future paper. In general, Sheldon has drawn a powerful indictment of the warring philosophies, and has, we think, taken some very necessary steps in the direction of a reconciliation. Among these is the recognition of duality as a metaphysical principle. But his applications and illustrations, it seems to us, need careful scrutiny. Any relation between terms may be expressed as a duality; but the duality may in some cases be a better example of logic than of metaphysics. Thus, the relation of an object to its background,³⁰ and a subject to its attribute,³¹ and a mixture and its constituent parts,³² and the members of a species and their individual variations,³³ are all reducible logically to the dual formula, although they may not represent the same metaphysical principle, or at least their metaphysical relationships may involve other principles. Sheldon himself recognizes that there may be other fundamental principles;³⁴ it seems to us that at least one such principle is that which Professor Spaulding calls "creative synthesis,"³⁵ and that this ought to be combined with the principle of duality, and

²⁹ *Ibid.*, p. 344.

³⁰ *Strife of Systems*, pp. 475–476.

³¹ *Ibid.*, p. 436.

³² *Ibid.*, pp. 466, 487.

³³ *Ibid.*, p. 458 ff., 502.

³⁴ *Ibid.*, pp. 511, 512.

³⁵ *The New Rationalism* (1918), p. 448.

perhaps one or two other principles, in an organic way, to yield a better metaphysics. Admission of the principle of creative synthesis into one's metaphysics would make relations dependent for their character as external or internal upon the stage of development reached—thus, for example, some at least of the external relations of atoms might become internal relations of molecules into which the atoms were combined. This would not do away with Sheldon's argument, but would place it in a different setting. When several such settings for his dualities have been supplied, it may be that reality will not appear to be so freely and arbitrarily dual as he finds it to be. Freedom may be found to consist in the generation of new things³⁶ rather than in the quick shifting back and forth between the terms of a duality.³⁷ All this, however, lies beyond the scope of the present paper. It is mentioned here in order to indicate what seems to us to be the fact that duality, especially as evidenced to us in the implicit duality of thinking, is a metaphysical principle of prime importance, but does not by any means exhaust the content of metaphysics.

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THE t OF PHYSICS

CONSIDER the equation $E = f(x, y, z, t_0)$ when $t_0 = 0$. This represents what may be called a snap shot and is supposed to show the relation of E to a frame of reference x, y, z , at any given instant. But what does $t = 0$ mean? We can no more stop time than we can stop the revolutions of the earth. The time that we live is entirely independent of our manipulation of t . The moment we posit an instant A in time, real time has already flowed on past A .

Let us consider the room in which we exist as our frame of reference x, y, z . Our position in this room can be defined by certain lengths L_1, L_2, L_3 , relative to this frame of reference. Inasmuch as we and the room move with the earth through space, our frame of reference has a motion of course relative to some other frame of reference away from the earth, but we ignore this motion because it can not affect our actions and say we are at rest in the room, meaning thereby only that there is no relative motion between us and the room which constitutes our frame of reference.

We define our position at rest by giving certain values to

³⁶ Cf. *ibid.*, p. 500.

³⁷ *Strife of Systems*, pp. 474-476.

L_1, L_2, L_3 , relative to the room. Now suppose we move about in the room. This is a common real experience which we can get voluntarily, *i.e.*, we can control our motion in the room. But mathematically this means that we can alter, as we please, the values of L_1, L_2, L_3 , up to the limits of the room. We can move along the axis OX and then we can move back again to the point of departure and produce the original values of L_1, L_2, L_3 . This is a real fact in experience and so the mathematical handling of L_1, L_2, L_3 , does represent something real in experience.

Now in mathematical physics t is treated just as we treat L ; that is, it is increased, decreased or made equal to zero. But the important point to note, the basis of the philosophical error in mathematical physics, is that this method of handling t does not correspond to anything real in experience. It took time to move along OX . When we retrace our steps in space it takes still more time; we can not reverse time. When we moved back along OX we decreased L , but surely we did not decrease time. In experience we actually can do something which is properly represented by saying L is decreasing to zero, but we can never do anything which will allow us to say the same thing of time. The only thing we can say of time is that it is always increasing and is entirely independent of our action. This is a very important point. In mathematical physics t is treated just as L is treated, but whereas our mathematical treatment of L means something in experience, the same treatment of t has no meaning at all in experience. The t of physics is not real time at all.

A similar misunderstanding arises with regard to our mathematical treatment of motion. We say for instance we are going to describe a motion from A to B . But if the motion is from A to B either, (1) it has stopped at B , or (2) it has gone beyond B . In the first case the motion has ceased and so all we can describe is what is left behind in existence by the motion, namely the space passed over by the motion. In the second case nothing we can say about AB can relate to the motion because by the hypothesis the motion is not there but somewhere else, namely beyond B . What we describe in every case is space and not motion. If we attempt to treat motion mathematically, that is quantitatively, if we cut it up into parts, we really substitute for the original motion a series of motions plus a series of rests, which is not the same thing at all as can be shown easily as follows. If we move across the room without stopping we get a certain experience. If we move across the room in steps of three feet stopping between steps we get an experience wholly different qualitatively. This must be so, other-

wise we could not tell what we were doing. But if we add the spaces passed over by the steps the sum will just equal the space passed over originally, *i.e.*, mathematical treatment applies only to space, never to motion.

Consider another case. If we ask you to describe a picture but move it about very rapidly, you will say immediately: "Hold it still. How can I describe it if you keep moving it about?" Just so, how can you? But do you not see that a still time ($t=0$) is not real time at all?

The trouble is due to the fact that in experience we get a percept of real time due to memory and on this as a basis we create an artificial concept of time which we know as the t of physics. It is inevitable that in practise we treat this symbol t quantitatively just as we do L . This does not mean that we hold t to be actually the same space as is represented by L , but it does mean that the only possible way mathematics can treat anything is the way it treats L , that is quantitatively, and to this way we apply the term "spatial."

The t of physics is the fourth dimension of experience lived as real time, but treated mathematically as if it were space. This is only to put into a short sentence the idea that Prof. Bergson has elucidated so clearly, so thoroughly, and so beautifully in his book *Time and Free Will*.

Now in physics we can give this t any values we please and handle it as we handle L in mathematics, but we must always remember that this t , while created originally from our direct experience with real time, is subsequently handled in a way that has no relation to real time at all since real time can not be increased or decreased by us nor can it equal zero. These characteristics apply only to space. Now there is no fault to be found at all in setting up a symbol t to represent a concept based upon our percept of real time. We have to do it, otherwise we could have no mathematical physics; only we must be very careful in drawing conclusions from equations in which t exists regarding our experience in real time.

All description is made upon the assumption that $t=0$ while we describe, and hence physics ignores real time, which, of course, never equals zero. Philosophically it is the idea of the absence of change during the description that is represented in physics by t_0 ; t_0 means that we are going to describe something at one instant of time, but manifestly this is impossible since any description requires more than one instant of time to make it. Why then does physics work? It works because the moment we act upon any of

its description we necessarily have to bring back into the phenomenon the real time which is missing in the description, since we live in real time and not in the t of physics.

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THE PARIS PHILOSOPHICAL CONGRESS

IT was the writer's great pleasure to attend the joint meeting of members and friends of the French, British, Belgian, Italian and American Philosophical Associations which was organized by the French Association and held in Paris in the holiday week of 1921.

The meeting began on the forenoon of December 27, with an address of welcome by Monsieur Xavier Léon, president of the French Association. Professor Brunschvicg pronounced a very simple and very eloquent testimonial in honor of the French colleagues who had died during the past seven or eight years. In the afternoon came a general session for the section of psychology and metaphysics at which Professor Bergson presided. Mr. Wildon Carr made a very interesting and persuasive distinction between the old idealism of Berkeley and the German tradition, and the new idealism represented by Croce and Gentile, but most adequately by Gentile. After an interval of discussion, Mr. Carr was followed by Professor Schiller, who argued that every fact is an instance of value, and that science can not, therefore, ever be dehumanized. Mr. Carr and Mr. Schiller spoke in English, and Professor Bergson summarized their theses in French.

At six that afternoon there was a reception to the foreign delegates at the Rapprochement Universitaire, rooms that correspond a little to an American faculty club.

Next day, December 28, began the meetings of the four special sections: logic and the philosophy of science, psychology and metaphysics, history of philosophy, ethics and sociology. These meetings were held in different rooms so that one hearer could not possibly listen to more than a few of the papers presented. I was assigned to the section for the history of philosophy and thus heard the interesting and very learned paper of Monsieur Dapr  el from Brussels on *Socratisme et Platonisme*—one of the themes proposed by the French Association. Professor Dapr  el's conclusions and evidence were to be published in book form by the end of 1921. There was an active discussion, by Monsieur Robin, professor of ancient philosophy at the Sorbonne, and Monsieur Croiset, who presided.

In the afternoon came a general session for the section of the history of philosophy, with a communication by the writer on the relations of science to philosophy as recently conceived, and by Signore Enriques on the Kantian theory of judgments *a priori* in its relation to the historical development of contemporary science. The address of Signore Enriques was made doubly interesting by the discussions of Langevin, Brunschvicg and Lalande.

The meetings of the four special sections were continued every forenoon for the three following days, and I regret my inability to give an account of them. Of particular interest, however, was the *Séance générale* for the section of logic and philosophy of science presided over by Monsieur Painlevé of the Institute. The topic was *The More Recent Forms of the Theory of Relativity*. The theme was introduced by Miss Wrinch from England, and debated with extraordinary power and vivacity by Professor Langevin and Monsieur Painlevé, Langevin arguing in defense of the relativity theory and Painlevé arguing without compromise against it. A more brilliant occasion of this sort can hardly be imagined than this general session was.

Later in the afternoon there was "tea" for the delegates in the salons of the Sorbonne, offered by the rector and his associates of the university.

On Friday afternoon came the general meeting for the section of Ethics and Sociology, Professor Bouglé presiding. The programme included two papers, one by Monsieur Clardon on *The State and the Nation*, and one by Monsieur Vermeil on *Constructive Principles and Political Experiences of Contemporary Germany*—both of them themes of poignant interest to the French thinkers of today.

Professor Charles Andler had been invited to discuss the question of German methods and experiences, and his treatment of the issues raised was as interesting and as remarkable as such a discussion could well be. In this field of social and political philosophy a visitor felt the atmosphere tense and sustained in which opinions became suddenly exciting and important. This singularly interesting meeting was continued the next day.

On Friday evening came the banquet offered by our French colleagues to their visitors, and on Saturday afternoon, a reception at the home of Mr. Xavier Léon. This brought the official programme to a close, but Monsieur Lalande, a day or two later, entertained those visitors who had not left Paris.

The whole meeting was superbly organized, and particular appreciation is due to M. Xavier Léon for his untiring labors. The

Sorbonne is a place of great dignity and much beauty, admirably fitted for an occasion like this one. The hospitality of the Paris philosophical faculty touched all of us, I am sure, very deeply, by its quality and by its manner—an entire simplicity combined with perfect cordiality and dignity.

The discussion from the floor by the French philosophers was marked by an amenity together with an incisive thoroughness rare to the not less friendly but more lumbering Anglo-Saxon. The American delegates were J. M. Baldwin, W. G. Everett, T. de Laguna, R. B. Perry and the writer. An old friend, R. F. Alfred Hoernlé, was present as one of the English group. The Americans presented the following papers: De Laguna, *A Nominalistic Interpretation of Truth*; Everett, *The Content and Organization of the Moral Life*; Perry, *Forms of Social Unity*. Mr. Baldwin was to have spoken on the *Reality of Value and the Value of Reality*, but he was unable to be in Paris. Professor Hoernlé spoke on *Berkeley as a Forerunner of Recent Philosophy of Physics*.

I must not forget the remarkably interesting description by Dr. Pierre Janet of a case he had been studying for a long time. His address had the title *Les deux formes de la volonté et de la croyance dans un cas de délire psychasténique*.

Brief abstracts of all the papers had been printed, and it is expected that the papers themselves will appear in a special number of the *Revue de Métaphysique et de Morale*.

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BOOK REVIEWS

The Philosophical Writings of Richard Burthogge. Edited with introduction and notes by MARGARET W. LANDES. Chicago: Open Court Publishing Company. 1921. Pp. xxiv + 245.

Richard Burthogge is one of the group of interesting minor writers of the late seventeenth century, whose works have been quite inaccessible for many years to most students of English thought. It is thus a pleasure to have his major philosophical writings made available in a well-printed edition. Once more the student of philosophy is made indebted to the Open Court Publishing Company.

The three works of Burthogge which are reprinted in this new volume are *Organum Vetus & Novum, or a Discourse of Reason and Truth* (1678), *An Essay upon Reason and the Nature of Spirits*, dedicated "to the learned Mr. John Lock" (1694), and *Of the Soul of the World, and of Particular Souls, in a Letter to Mr. Lock* (1699). The

first and third of these works are printed entire; the second, being tediously long and in large part unimportant, has been abridged and is given only in so far as it has any light to throw on Burthogge's epistemological positions. The notes at the end of the volumes are mostly explanatory of the literary and personal allusions in the text rather than critical of the historical and philosophical issues raised; but they are based on careful research and are quite accurate (except where in note 23 Burthogge is inadvertently said to refer in 1678 to Locke whose work did not appear until twelve years later). The introduction to the volume is the least satisfactory part of the book, not that it asserts any unsound thesis, but that its emphasis is misleading in regard to Burthogge's historical relations. The chief point in the introduction consists in an examination of certain ways in which Burthogge anticipated Kant. There seems to be no good reason for selecting Kant rather than Sir William Hamilton or Cousin or even Herbert Spencer. Though the comparison of Burthogge and Kant holds good, it is unfortunate, as an introduction to this particular volume, for two reasons. First, it suggests the old discredited method of treating English classic philosophy as a preparation for German thought. Secondly, it also implies that Burthogge was the only British writer who thus anticipated Kant, though Locke to whom Burthogge was so closely related anticipated Kant in every one of the same respects with one exception. The chief historical problem of the relations of Burthogge and Locke receives scanty notice.

Of the Soul of the World and of Particular Souls is largely concerned with the fantastic pantheistic animism which Burthogge developed, under the influence partly of the Cambridge Platonists and partly of Malebranche. Its historical importance seems to lie mainly in the fact that it illustrates the way in which Malebranche was usually understood, or rather misunderstood, on English soil. The numerous English misinterpretations of Malebranche were due to the great difference between French idealism and English idealism. It would not be much amiss to sum up the difference by saying that French idealism was Platonic and English idealism was Neo-Platonic. What is meant by that characterization is that French idealism was concerned with certain logical relations and moral standards, and English idealism was concerned with the proof of a certain kind of spiritual substance or stuff. The Cambridge Platonists, Burthogge, and even Berkeley confused logical and metaphysical questions, and endeavored to combat materialism by establishing a different kind of substance than that known as physical. No better illustration of the English inability to understand French idealism could be found than John Locke's two essays on Malebranche himself and upon Norris,

the one real pupil of Malebranche in England (*cf.* Locke's *Works*, edition of 1823, Vol. IX, pp. 211-255, and Vol. X, pp. 246-259). Burthogge's idealism rejects "the seeing of all things in God," and substitutes therefor the being a fragment of the world soul.

The other two works reprinted in this volume are primarily concerned with Burthogge's logical and epistemological positions, and are the ones most worth reading to-day. The main historical problem which they raise is the relation between Burthogge and Locke; for though the many points of resemblance are easy to see, the question of independence or indebtedness of one to the other is baffling. It may be profitable to list the points of resemblance. In Burthogge's work of the year 1678 the following points are made which later appear in Locke's *Essay*: that "full and free assent" such as Lord Herbert's *consensus gentium* is no guarantee of truth (36-37); that "anticipations" such as the alleged innate ideas owe their seeming indubitability, not to their having been divinely planted in the mind, but to their having been acquired early in experience and become deeply fixed by habit (37-38); that to be "clear and distinct" is not, as Descartes supposed, equivalent to being true (34); that "enthusiasm" is likely to lead men astray in thinking (16); that all the objects of human thought have their locus only in the mind and do not exist independently (12-13, 24-25); that our notions as well as our sense-experiences are real, not in that they mirror the nature of external objects, but only in that they are "grounded" in those external objects (17, 39); that truth is harmony, congruity, or proportion of things with each other as they exist in our minds (40-41, 44); that faith may pass beyond but can not contradict reason (19); that there are certain truths which are self-evident as soon as the mind attends to them (39); that in many affairs the human mind can not reach certainty, but must be content with probability (46). In no case would it be safe to affirm that Locke borrowed these positions from Burthogge; for many of these positions were contained in the earlier drafts of Locke's *Essay* which go back as early as 1671, and others which were incorporated in the second and fourth editions of Locke's *Essay* are discussed in his correspondence with Molyneux without the slightest suggestion of dependence upon any writings of other authors. In the case of such positions as the relation of faith and reason, or the self-evidence of certain truths, or even the dependence of notions upon sense-experience, it is probable that Burthogge and Locke were both influenced by a current attitude of their time; but it is difficult to find any such current attitude to explain other positions shared by the two men. The historical question here involved requires further careful study; and though Locke still may be considered to have made the

most noteworthy statement of the subjective theory of knowledge, he can perhaps no longer be considered to be quite such an innovator in philosophy.

Burthogge's later work of 1694 is clearly and confessedly dependent upon Locke to whom he dedicated the essay. The subjective epistemology of the earlier work is restated more in Lockian fashion, though Burthogge maintains one point in which he differed from Locke, namely the activity of the mind in sensation (76-77). Attempts to describe the nature of substance are, however, made by Burthogge in this work, as by Locke in the *Essay*, though they were not made in the earlier work of 1678 and are obviously inconsistent with the epistemological position already adopted. For example, the substance of water is supposed to consist in itself of "little parts" of a certain magnitude and size, figure and shape, kind and motion, even though exact knowledge thereof is impossible (83-87); that is, water is treated as an atomist would treat it, as possessing objectively what Locke called the primary qualities. Again, two kinds of substance, matter and mind, are regarded as proved from the two different kinds of effects which they arouse in the mind of one who perceives them (91). Or again, Descartes's resolution of corporeal substance into "mere" extension is rejected, and matter is treated as a substance which has extension as an attribute (96). Still again, the whole physiological explanation of sensations as due to impressions coming in through the end-organs from an external world is adopted quite realistically (127). Thus Burthogge under Locke's influence departs from idealism towards dualism, and takes a stand in his metaphysics which is utterly unwarranted by his theory of knowledge. Such influence may be regarded as unfortunate; but it is none the less real. No problem remains unsolved in connection with this later work as in the case in the relation of Burthogge's earlier work to Locke's *Essay*.

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Nietzsche, sa Vie et sa Pensée: Vol. II. La Jeunesse de Nietzsche jusqu'à la Rupture avec Bayreuth. CHARLES ANDLER. Paris: Editions Bossard. 1921. Pp. 469.

It would be unfair to readers of the JOURNAL were a lengthy delay in review of these volumes (Vol. III is before me also) to result from very recent changes in the personal plans of the reviewer. Seeing that this would be inevitable were full review in question, and that, as in the case of Volume I (*cf.* this JOURNAL, Sept. 1, 1921), such review must needs await completion of the work, I submit some account of M. Andler's progress, *pour servir*.

Volume II contains an Introduction, and three Books—the “Shaping of Nietzsche”; the “Preparation for the Book on Tragedy”; the “Attempt to Reform Wagnerism.” But these titles offer little indication of the variety and suggestiveness of the contents.

The Introduction gives Andler an opportunity to state his manner of approach, and to issue a warning about the two Nietzsche “traditions”—that of Wiemar and that of Basle—lions in the path. Book I consists of two chapters; on “Forebears and Adolescence,” and the “University and the Influence of O. Ritschl” respectively. The pictures of Saxon culture, of the Lutheran rural clergy (reminding one forcibly of Scotland), and of the unique school at Pforta, are admirably drawn. There is a splendid pen-portrait of Ritschl. It affords an illuminating clue to the humanistic German “man of science” in the mid-nineteenth century—the zeal of thine house hath eaten me up. Book II opens with an equally informing presentation of social and cultural conditions at Basle when Nietzsche arrived upon the scene; a town with a distinctive atmosphere of its own, like so many Teutonic centers from of old—Francke’s Halle, Kant’s Koenigsberg, Goethe’s Weimar, Schelling’s Jena, for example. Follows a charming account of the “Idyl of Tribschen”—Nietzsche in the bosom of Wagner domesticity. Chapter I concludes with the events attendant upon the war of 1870, and I am glad to see that Andler treats Nietzsche’s physical mischance as an incident. Chapter II describes Nietzsche’s intercourse with five intimate friends—Paul Deussen, Heinrich Romundt, Carl von Gersdorff, Erwin Rohde, and Franz Overbeck—saying something about repercussions; and stresses the influence of the family circle, making some pointed remarks on the sister, now famous, thanks to the brother’s reflected glory, but not always to be taken, for this mere accident, *au pied de la lettre*. Chapter III is devoted to an intensive account of the intimate soul-relations between Nietzsche and Wagner, in which Andler takes care to hint (Sect. ii) the subtle part played by Cosima Wagner, the “Corinne-Ariane” of the *Empedocles* Fragment. Some reading between the lines is necessary here; but section i of Chapter V (“The Foundation of Bayreuth,” some 70 pp. later) serves to make matters plainer. Chapter IV is specially noteworthy for its analysis of the sources of the *Birth of Tragedy*—in the Romantics (Fr. and W. Schlegel, and Fr. Creuzer), in O. Müller, Fr. Welcker, J. J. Bachofen, and Fr. Liszt. The summary (pp. 272 f.) points the moral well (*cf.* pp. 289 f.). As just indicated, chapter V, concluding Book II, pictures Tribschen at its warmest; an exhibition (the most intimative among not a few) of German *Schwärmerei*

nigh incredible to the phlegmatic (and barbarous!) Anglo-Saxon. In short, Romanticism rampageous, ante-Bismarck *Kultur in excelsis!*

Book III raises issues even more interesting. We see Nietzsche just beginning to free himself, and to sense problems destined to return for judgment till the last. Chapter I deals with "Nietzsche's First Scientific Studies"—not *Wissenschaft*, but natural science. The physicists Boscovich, Pouillet, and Mohr, the chemists Kopp and Landenberg, and the cosmologist Maedler, furnished much food for thought. But the main spell seems to have been exerted by J. K. F. Zöllner, the Leipzig astronomer, who attacked his fellow physicists much as Nietzsche had attacked his fellow philologists; and who met a similar reception—witness Wilamowitz's famous or infamous *Zukunftphilologie* (pp. 291 f.). His "scandalous" book, *Über die Natur Kometen*, a contribution rather to the literature of panpsychism than of astronomy, posed the question of the "unconscious," then clamant. It jumbled the terminology of physics and psychology, transforming facts observed in the bodily order into experiences of the soul, making possible a reversion to pythagoreanism (pp. 318-20). Although Zöllner essayed to explain the rise of industry and of science, together with the reasons for social decadence, he forgot the office of art, dear to Nietzsche, because with art lay the potency of the future. In fine, Nietzsche's contact with physical science rendered it necessary for him to expand Wagnerism rationally. Nor was he to stop at physics and chemistry.

Darwin's *fermentum cognitionis*, known to Nietzsche through the several reactions of F. A. Lange, Oscar Schmidt, and Nägeli, involved other issues. At this juncture, personal contact with L. Rütimeyer, the paleontologist, professor of zoölogy and comparative anatomy at Basle, a "philosophical spirit" in a day when the riches of observation and experiment had atrophied generalization (p. 332), exerted decisive influence, causing Nietzsche to substitute for the individualistic struggle for existence a genetic, and neo-lamarckian, *élan vitale*. This "prime vital energy" may portend much, mayhap even the birth of a supreme race. For, as Rütimeyer had the hardihood to suggest, "*Notre squelette porte en lui les possibilités d'une evolution ultérieure, autant que toute autre forme du squelette vertébré*" (p. 343). Hence Nietzsche's preoccupation thus early with the possibility of an ascent to a higher type of humanity. Here, then, is a mystic positivism and, to the extent of its mysticism, it demands a reckoning with religion.

Accordingly, chapter II deals with the "unseasonable" essay on D. F. Strauss. The friendship with that "*vieille fille fanatisée*"

(p. 352), the pontificating *bas-bleu*, Malwida von Meysenbug; the marked influence of the views of Paul de Lagarde (Göttingen) about Protestantism, Catholicism, and Judaism; and of Franz Overbeck's *Über die Christlichkeit der heutigen Theologie* (p. 368 f.) added to the ferment. As Nietzsche saw things now, Cosima Wagner threatened to corrupt her husband, Strauss to corrupt the German people—the one by reactionary faith, the other by equally reactionary science. So Nietzsche agonizes. The tract on *History* results and, with that on *Schopenhauer as Educator*, he passes beyond Wagnerism, to begin the "Renaissance of tragic philosophy in Germany" (p. 416). Wagner must be constrained to reconstruct his universe of values, or a final break can not be averted. Chapter IV diagnoses the symptoms which led to the break, and brought Nietzsche's "*L'affranchissement*" (the title of the chapter). Suffice it to say that association with Jacob Burckhardt, another member of the stimulating circle at Basle, supplied a decisive factor. The volume closes with a brief appendix on Nietzsche's philological writings, exploited recently by Ernst Howald in his *Friedrich Nietzsche und die klassische Philologie* (1920).

It were superfluous to praise Andler's breadth of knowledge, presented with the unique talent of his people for clear and crisp exposition. The book marks another step in an indispensable guide to Nietzsche's Odyssey of the spirit. Similar review of Volume III will follow soon.

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The Psychology of Everyday Life. Pp. ix + 164. *The Psychology of Industry*. Pp. xi + 148. JAMES DREVER. London: Methuen & Co., Ltd. 1921.

These two books are written for the general reader in that happy popular style which is the peculiar gift of the British and the despair of Continental writers. Here and there a striking expression makes a scientific fact stand out with the vividness of a poetic phrase, as, e.g., "Experience is itself living." "The world of make-believe is a self-created world."

In the first volume nearly all the major points of modern psychology have been touched upon, though rather lightly it must be confessed. His treatment of the emotional life is rather better than that of some other subjects and he seems particularly fortunate in his application of the psychological theories of Freud to this phase of conscious life. The motive in writing the book is the belief, "that for all those arts and sciences which are concerned with the human factor in the world process in any of its phases the science

of psychology is as fundamental as is the science of physics for all those arts and sciences which are concerned with physical processes." (P. v.)

The second volume might be classed as applied psychology and treats of the topics pertaining to industry and commerce, such as the intelligence and fitness of the worker; the function of mental engineering; the problem of fatigue; economy of learning and working; and the theory and art of salesmanship. Standard tests and experiments are described and interpreted from the author's standpoint, which he tries to keep strictly psychological in distinction from that of the economist or the social philosopher.

These books might well be read by every teacher of psychology by way of learning how the subject may be related to life in a way to attract and benefit the average student. Their chief appeal, however, must be to those persons whose work is principally that of dealing with human relationships such as the educator, the social worker, the minister, the lawyer, and the employer of large numbers of his fellow men.

L. PEARL BOGGS.

URBANA, ILL.

JOURNALS AND NEW BOOKS

MIND. October, 1921. *The External World* (pp. 385-409): C. D. BROAD. - A discussion of the meaning of sensible appearance in the light of recent realistic theory, the essence of which is "that whenever I judge that something *appears* to me to have the quality *q* there must be an object with which I am acquainted which *really does have* the quality *q*. This object is the sensum." The sensum, sensation, and the physical object must be distinguished. *Some Explanations* (pp. 409-429): S. ALEXANDER. - A reply to criticisms of *Space, Time, and Deity*. *Literary Truth and Realism, The Aesthetic Function of Literature and its Relation to Philosophy* (II) (pp. 429-444): P. LEON. - Criticism of expressionist and other views of art and a "re-statement, from the point of view of literature, of the old formal view of art. . . ." *Discussion. The Meaning of "Meaning"* (pp. 444-447): F. C. S. SCHILLER. *Critical Notices*. W. E. JOHNSON, *Logic, Pt. I*: J. GIBSON. D. Fawcett, *Divine Imagining*: J. S. MACKENZIE. Viscount Haldane, *The Reign of Relativity*: H. WILDON CARR. *New Books*. Eugenio Rig-nano, *Psychologie du Raisonnement*: F. C. B. Adolfo Levi, *Sceptica*: A. E. TAYLOR. Graham Wallas, *Our Social Heritage*: V. M. BENECKE. J. J. Putnam, *Addresses on Psycho-analysis*: E. PRIDEAUX. Wm. Brown, *Psychology and Psychotherapy*: W.

WHATELY SMITH. J. Languier des Bancels, *Introduction à la Psychologie*: JAMES DREVER. Robert Briffault, *Psyche's Lamp: A Revaluation of Psychological Principles as Foundation of all Thought*: L. S. S. J. O'Callaghan, *Dual Evolution*: L. J. RUSSELL. Aristide Gabelli, *Il Metodo di Insegnamento nelle Scuole Elementari d'Italia*; Bertrando Spaventa, *La Liberta d' Insegnamento*; M. Casotti, *Introduzione alla Pedagogia*: B. BOSANQUET. L. Cazamian, *L'Évolution Psychologie et la Littérature en Angleterre*: I. A. RICHARDS. Felix Weltsch, "Gnade und Freiheit": JAMES LINDSAY. Joseph Jastrow, *The Psychology of Conviction*: C. W. V. James Drever, *The Psychology of Industry*: B. M. Drs. Ferenczi, K. Abraham, E. Simmel, E. Jones, *Psycho-analysis and War Neuroses*: E. PRIDEAUX. Knight Dunlap, *Mysticism, Freudianism, and Scientific Psychology*: J. W. S. *The Works of Aristotle, Vol. X: Politics*, by Benjamin Jowett; *Oeconomica*, by E. S. Forster; *Atheniensium Respublica*, by Sir F. G. Kenyon: A. E. TAYLOR. Antonio Aliotta, *L'Estetica del Croce e la Crisi dell' Idealismo Moderno*: H. W. C. Giovanni Gentile, *Giordano Bruno e il Pensiero del Rinascimento*: J. L. M. Pasquale Gatti, *L'Unita del Pensiero Leopardiano*: A. E. TAYLOR. E. Cunningham, *Relativity, the Electron Theory, and Gravitation*: C. D. B. A. A. Robb, *The Absolute Relations of Time and Space*: C. D. B. W. Tudor Jones, *The Training of Mind and Will*; and *The Making of Personality*: F. C. S. S. De Witt H. Parker, *The Principles of Aesthetics*: I. A. RICHARDS. Ch. Lalo, *L'Art et la Vie Sociale*: I. A. R. *Philosophical Periodicals. Notes. "Common Sense and the Rudiments of Philosophy"*: CHARLES E. HOOPER. *A French Historian of the Philosophies of the Middle Ages: François-Joseph Picavet (1851-1921)*: M. P. RAMSAY.

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NOTES AND NEWS

The third International Moral Education Congress will be held at Geneva on July 28, 29, 31 and August 1 of the current year. The object of these congresses, of which the first was held in 1908 in London and the second in 1912 at the Hague, is to serve the cause of moral education, both inside and outside of schools and universities, irrespective of religion and nationality. The special theme of the forthcoming congress will be international good will and the ways of promoting it. The teaching of history will receive much attention. The official languages will be French, English, Italian, German and

Esperanto. Papers giving a general survey of a subject may fill about 30 minutes; shorter and more technical ones may fill 10. Papers will be followed by discussion. There will be a reading room, to contain as much as can be brought together which bears upon the purpose of the congress. One exhibition will be of books for young people, handbooks and newspapers of a kind to avoid. Only about thirty papers can be printed, owing to the cost of publication, but it is hoped that these will be of high merit, and that the congress will make a serious contribution to a field in which knowledge and coöperation have never been more needed. The chairman of the executive council is Sir Frederick Pollock.

A meeting of the Aristotelian Society was held on March 6, 1922, Professor J. S. Mackenzie in the chair. Professor S. N. Dasgupta read a paper on "The Logic of the Vedanta," a synopsis of which follows: The earliest Upanisads, forming the concluding part of the Vedic literature, were completed certainly before 500 B. C. The main doctrine found in them is that self is the ultimate reality. This self is not the Ego but pure consciousness, which was regarded as supremely unchangeable. The early Buddhist philosophy sought to prove that everything was changing and that there was nothing which could be regarded as permanent. The nihilistic school of Buddhism as interpreted by Nagarjuna and Aryadeva (100 A. D.) demonstrated, by critical and dialectical reasoning of the type which Mr. Bradley has used, that our ordinary conceptions of experience are absolutely relative and are therefore indefinite and undefinable. The idealistic Buddhists accepted this position and held that all worldly experience is due to mental construction. The Vedanta, as explained by Sankara, and as interpreted by Sriharsa and Madhusudana Sarasvati and others, held that pure consciousness, as revealed in immediate experience and as distinct from its particular form and content, is self-contained and absolutely real. Particular forms are relative and mutually interdependent. They are definable either as being or as non-being for they participate in the nature of both. They are the modifications of separate logical category called the indefinite and have the same sort of logical status as illusions. They appear as existent by virtue of their relation with pure consciousness which is absolutely unchangeable and self-contained and immediate. Everything which has any form or content is thus a joint manifestation of the indefinite. The nature of all that is relative is that it has being in some sense and it has no being in another, and it can not therefore be regarded either as positive or negative. This necessitates the acceptance of the indefinite as a separate logical category which explains the logical status of all that is relative.

THE JOURNAL OF PHILOSOPHY

THE FORM OF PHILOSOPHICAL INTELLIGIBILITY¹

UNDER this title I wish to call attention to an aspect of a very old and familiar problem—that of the nature of philosophy. We habitually assign to philosophy the task of “explaining” the world, or of rendering experience “intelligible.” Now is it possible to specify more exactly what is involved in this requirement? What is it to explain or to render intelligible in the philosophical sense, and what is the form or logic in which philosophy can be required to attain rationality? It would seem necessary to understand as clearly and definitely as possible what type of explanation philosophy may properly be expected to furnish before any discussion is in order regarding its competency to fulfill its task, or concerning the relative value and pertinency of various systems.

The central position that the problem occupies logically is not, however, its only claim to consideration. The failure to discriminate between different forms of explanation has frequently given rise to practical misunderstandings regarding the fruitfulness and value of philosophical study itself. It would be hard to find a better illustration of the fact that discontent and disillusionment often have their sources in unreasonable expectations and impossible demands. Complaints are brought against philosophy—not merely by outsiders, but by its professed students as well—for a strange variety of reasons: because it does not give us demonstrations like mathematics, or new facts like the natural sciences, or esthetic enjoyment like poetry, or a technique for transforming education and social life in accordance with the demands of the age. Or, again, the demand is that philosophy shall furnish a statement of the most general relations of existence, analogous to but more inclusive than the fundamental principles of mathematics. Now I do not say that all these requirements are artificial and suggested merely by external analogies—though I think that some of them undoubtedly are—nor is it necessary to assume that on examination they would appear mutually inconsistent. They have been mentioned only to illustrate the variety of the demands that are made upon philosophy, and to

¹ Read before the Eastern Branch of American Philosophical Association at Vassar College, December 29, 1921.

suggest the corresponding necessity from a practical point of view of such an inquiry as is suggested by the title of this paper.

In considering this question it is helpful, I think, to make an attempt to distinguish genuine philosophical problems from those that are artificial. Of course such a distinction can not be made in any external fashion by setting up a preliminary definition. In philosophy, more than in any other type of inquiry, the formulation of the problem and its answer can never be sharply separated. To succeed in asking a reasonable question is already in some measure to see one's way to an answer. One must begin, then, by attempting to appreciate rightly the objective situation and its demands. A genuine philosophical problem is one that is objectively grounded and does not spring merely from the associatively directed fancy of a subjective interest. There must underlie it an order of experience that is already fundamentally organized in accordance with rational principles, and it is from the demands of this experience that philosophy as a consciously directed activity must proceed. It will of course be necessary to bring up for further examination and criticism principles previously received; but in doing this philosophy must rest its case upon an order of experience that is taken, at least provisionally, as reasonable and secure. Thus, while one may reasonably question the validity of any particular fact or phase of experience, one can not intelligibly question the validity of experience as a whole. The beginning of all philosophy consists in an acceptance of the world-order of our own time and civilization, and from these roots all its genuine problems spring.

These considerations when applied help to protect us against a good many pseudo-problems that are popularly supposed to be the special interest of philosophy. It is not the business of philosophy, as Lotze was fond of remarking, to prove that the world exists or to demonstrate how it is made. Philosophy has not to show us how to make a world, but to help us in understanding the actual world in which we find ourselves. The genuine problems of philosophy are natural problems, not reached by any artificial straining, but generated by the demands of a human life to know itself and to become at home in its world.

There is always a special danger that when philosophy is carried on largely by schools and schoolmen it may become artificial through too great an emphasis upon formal completeness and the requirements of technical demonstration. It would be quite in order to raise the question, "Are we Scholastics?" Scholasticism has of course its merits, and I am not arguing in favor of dilettantism, or lack of earnestness and seriousness in carrying on philosophical inquiries, but against making what is merely technical and abstract

the end and goal. It is of course to be admitted that for certain preliminary inquiries in philosophy technical methods and a rigorously defined terminology are necessary. But two things should be borne in mind: first, that such technical inquiries are a part of philosophy only in so far as they directly or indirectly throw light upon some genuine problem, and, secondly, that the philosopher by profession is not thereby set apart from his fellows and dedicated to some precious but obscure inquiry in which they have neither part nor lot. The important matter is to rid thought of abstractions that are not instrumental to concrete knowledge, and as little to accept our problems ready-made from the schoolmen of the present day as from those of the past. Philosophy, as criticism that is based upon life, has first of all the function of showing the irrationality and illegitimacy of many questions, both contemporary and traditional.

But the mere resolve to occupy one's thought with the concrete is not enough: it is also necessary to proceed to it through criticism, *i.e.*, though a natural dialectic of thought. That way is long and difficult, and is in general the path which the classical systems of philosophy have tried to follow.

On the other hand, I can not help thinking that in some of the present-day movements that advertise themselves as "new" and "scientific" there is plainly marked a tendency to turn away from one form of abstraction in order to take refuge in another. The desire to direct philosophy into more fruitful channels doubtless underlies the effort to assimilate its procedure to that of the special sciences. The traditional form of philosophical inquiry, it is said, is neither logically convincing nor practically fruitful, while contemporary science offers an example of an increase and systematization of positive facts that represent a solid achievement both on account of its certainty and of its service to society. Hence arises the demand that philosophy shall be reformed by the adoption of the scientific method, and made to yield conclusions that are rigidly demonstrable and capable of fruitful application.

Now one may sympathize in large measure with the motives of these reformers without being ready to accept their somewhat pessimistic diagnosis of the condition of philosophy or approving the remedies they propose to employ. That philosophical inquiry should be carried on with systematic thoroughness and with the utmost attention to real facts and willingness to follow where the argument leads, no one would wish to deny. Indeed, only on these terms is philosophy true to its name. But this is not to assert that it must abandon its own problems and procedure and seek for a place among the sciences. Here again I would suggest the possi-

bility that dissatisfaction with historical philosophy has its source in a misunderstanding in regard to the form of intelligibility at which its representatives have aimed. May it not be true that the historical systems seem to certain persons to have little value just because they themselves are interested only in a different type of problem, and that this fact explains why they seem to themselves to have received a stone when they asked for bread?

Apart from religion, there are three consciously directed approaches through which the mind may be said to attempt to render the world familiar to itself—those of science, of philosophy, and of art. In ordinary life these interests are not clearly defined and differentiated, and in every normal individual they are all present and influence each other in some degree. But however intimate their relation in the life of any individual, it is essential that one form of problem should not be confused with another. The form of intelligibility that philosophy seeks, and in some measure attains, is not that of science and not that of art, nor is it any admixture of the two, though it has relations with both. Leaving for the present the nature of art out of account, we may consider some of the fundamental distinctions between scientific and philosophical explanation.

One or two preliminary remarks are, however, necessary to avoid misunderstanding. In the first place, the distinction between these two modes of inquiry does not exclude, but rather provides for, mutual aid and supplementation in practice. The effort to explain the world is a human undertaking and is carried on by human beings, not by the abstractions we sometimes name "the philosopher" and "the scientist." To ensure genuine progress in any field it is necessary that the two forms of inquiry should take note of each other, even that they should interpenetrate each other within the same mind. I have tried at various times to state and illustrate my understanding of necessary connection between them, and of the nature of the dialectic by means of which they are connected. At present I wish to insist that it is only by keeping clear the essential differences that the true relation between them can be understood.

The general question regarding the relations of philosophy and the sciences has, then, many aspects which must at present be left out of account. What I wish to emphasize is that the demands of explanation in the two fields are not identical, and that a complete explanation in one set of terms has no immediate relevancy as an answer to a question raised from the point of view of the other inquiry. The scientific explanation of why Socrates is sitting in prison awaiting the execution of his sentence, stated in terms of the contraction of the muscles of his legs and the revolutions of his bones in the socket joints does not furnish the kind of explanation

that is demanded. What is required is to supply the context in terms of the personality and moral character of Socrates. It is not a mere difference of substituting a teleological for a mechanical explanation, as might appear from the illustration. That the form of philosophical intelligibility always does involve teleology, is, I think, true. Nevertheless it is necessary to carry the matter further since there is a superficial type of teleological explanation that has no claim to the title of philosophy, just as there are causal explanations that can not properly be regarded as scientific.

It may throw additional light upon the question before us to ask what legitimate demand of our intelligence remains unsatisfied after the scientific account is complete. What is still lacking to comprehension? It may be said that the sciences make us familiar with the general framework of reality and furnish a kind of inventory of the different types of things contained therein by exhibiting how they may be thought of as compounded in certain uniform ways of simpler events or elements. The laws expressing the relationships of these elements are at the same time, as Bacon points out, rules by means of which they may be constructed. Now although this type of explanation is indispensable, and may even seem to satisfy all justifiable demands in regard to certain fields of reality, it does not give us any insight regarding the nature of the significant individual things by which we are surrounded and in relation to which we live. On the contrary, it obliterates all real individuality and reduces everything to identical elements or events. It yields knowledge in the form of general concepts that do not directly apply to concrete individual wholes, but to the abstractly simplified relations of ideally defined units.

Now conceivably in the realm of what we call nature it might be possible by substituting poetry and other forms of art to dispense entirely with the philosophical mode of inquiry. I have a friend who sometimes remarks, "I never feel any need of philosophy. When I turn from mathematics I fall back on poetry." That attitude seems comprehensible, as I have said, so far as the realm of outer nature is concerned, though even there I believe it would not be difficult to show that experience involves a relation to actual individual wholes whose nature demands comprehension in intellectual and not merely in imaginative terms. However that may be, it is certainly true that human nature and the world of social and historical life have always formed the central interest of philosophy, and of these the attitude in question simply renounces all critical and coherent knowledge. For the sciences based on the logic of mathematical calculation recognize no individuals and can furnish no insight

into the reciprocal human relations that constitute the social and historical life of man.

What we seek under the name of philosophy is an understanding based on reflective criticism and observation, of the individuals and types of individuals that make up the world we live in. This process of reflection, it is evident, must both presuppose and issue in a knowledge of the self. I know of no better description of philosophy than as the most fully integrated effort of man to establish relations with his world and thus to attain to the familiarity and confidence that come from understanding.

Where shall we look for a realized exemplar of that kind of intelligibility? Philosophy, as Hegel loved to say, can not be real as mere desire for knowledge, but only through recognizing itself as knowledge already implicitly realized. If science does not give us the form of knowledge we seek, where is it actually to be found? In the classical systems of philosophy, doubtless. But it seems to me that a familiar illustration of the kind of insight that constitutes philosophy may be drawn from the understanding that we have of that part of the world with which we are most familiar, such as the circle of the home, or the life of a small community whose members have known each other long and intimately. In such situations the spirit of the whole is comprehended as the common life of which all the individuals partake, and in terms of which their relations to each other seem natural and reasonable. This kind of understanding is of the essence of logic, though it is rarely drawn out into a system of abstract propositions. But at its best it holds within it, as it were in solution, the result of countless observations and analyses, and is thus supported by all kinds of lore—historical, scientific, psychological—constituting a richness of concrete detail that has been harmonized and blended into the form of immediate familiarity. The depth and significance of the immediacy are proportional to the attention and insight that have gone into processes that have led up to it. Such understanding does not come by nature, or through mere unreflective contact, but is the product of accurate observations and of well-disciplined and sympathetic imagination. It is no blind oracle pronouncing ambiguous conclusions, but has its witness within it and is able to supply the context that renders its judgments intelligible. It may accordingly be said that this type of knowledge is philosophical in the degree in which it attains systematic completeness of view in concrete form. It comprehends individuals of different orders in the form of a significant and concrete unity by supplying the context that gives to them the form of a self-subsisting whole.

Objection may, however, be raised against accepting this familiar

type of knowledge as an illustration of the true form of philosophical intelligibility on the ground that the latter must rest upon rigorously demonstrated propositions that command universal consent. Universality and necessity, we have been often told, is the true form of philosophy. There is a truth in that statement, but the philosophical form of universality and necessity is not that which belongs to abstract propositions. Science is a system of abstract propositions, but the demand for this type of demonstration in philosophy rests upon a confusion of ideas. Rigorous logical proof of the type demanded by science is always purchased at the cost of abstraction, as is most clearly illustrated in the case of mathematics; the more complete the abstraction from reality the more compelling is the nature of the formal demonstration. Just because philosophy is occupied with the relations of concrete individuals and systems of individuals, the logic of general propositions can not be its final test or form of truth.

The difficulty is still likely to be urged, however, that what is not expressible in propositions that can be formally demonstrated is but subjective opinion, and can never furnish a common basis for life or society. This would be a serious objection if it were true. But it rests, I think, upon a misunderstanding of the nature of knowledge as a process of systematic concretion, a movement from the abstract to the concrete. In the first place, demonstration of the type described by formal logic has its place and function only within this total process. It always presupposes an objective world of fact upon which the common intelligence of individuals rests. The abstract method can operate only in so far as it is supported by a concrete basis of organized fact. One could infer nothing in a world of mere assumptions. And secondly, in actual reasoning there is always the further question after the formal correctness of a conclusion has been accepted—the question, namely, as to what application it has, *i.e.*, how it enters concretely into the world of reality and modifies or further defines our knowledge of the nature of the individual systems that compose it.

The common experience which forms the basis of a common social life is, even on its intellectual side, wrongly conceived as of the inflexible type suggested by the literal identity of identically formulated propositions. It is comparatively easy to agree upon a common formula; but no matter how carefully the words have been defined in the abstract, the attempt to apply the formula is sure to reveal differences of personal opinion. Such formulas have an important function as instruments in attaining a common understanding, and they serve too as a nucleus about which common feelings grow up. But neither practical life nor philosophy can rest

in such abstract forms of agreement. The conditions of a common life demand differences no less than identity. Without such differences there would be no knowledge, nothing but the dead level of opinion that is without life or movement. If this is true, the objectivity of philosophy is not something guaranteeing a common platform of truth that is once for all defined and demonstrated. It is rather the concrete basis of an understanding developed through the give and take of a common life.

If the logic of philosophy is of the character that I have endeavored to sketch, it is evident that the oft-repeated criticism that it obscures differences and issues in a block universe is based upon a failure to distinguish clearly between its goal and that of the sciences. It is the logic of science that has an eye only for uniformities, while that of philosophy seeks out and maintains differences. The latter, however, does not rest in discrete or isolated points of view; for the principle of individuality when rightly understood leads on to a system of individualities. The individual, that is, just because it is not a mere particular but possesses character or significance, is a member of a world or system of individuals. Everything however depends upon rightly apprehending the nature of the universal that at once unifies and individualizes its members. That is, neither aspect of the individual reality must be taken apart from the other. If we say that the individual is the synthesis of the particular and the universal, we must remember that these aspects have no meaning apart from each other, they are not elements existing separately out of which we have to compound the individual whole. The universal is not something to be pictured existentially, either as a connecting link, or a common element in different individuals. Philosophy is indeed speculation or seeing, but its light must not be confused with representation in the form of imagery. As reason, *i.e.*, the integral mind in its totality and completest effort after the real thing, it has the form of universality and freedom. That is, it is not bound down and controlled, as in the ordinary routine of practical life, by the first form of particularity and hard isolation, but sees beyond these and comprehends their true reality and significance in terms of its own system of concrete truth.

The conclusion we have reached, then, is that the philosophical form of intelligibility is that of a concrete universal which expresses the inwardness and essence of individuals through the grasp of their constitutive relations. Just because modern science is not concerned with significant individuals, but with abstract aspects taken as bare "existences," its universal is barely conceptual or nominal. A scientific law is regarded as simply a generalized formula or abbreviated record of correlations between certain abstract aspects of real

things. The whole purpose of the inquiry is to obtain a summary form of representing facts so as to afford a convenient and economic means of dealing with them practically. "The existential point of view" is neither that of common-sense nor that of philosophy: it is an artificial simplification which has its own logic and its own justification, adopted and maintained by scientific procedure in accordance with carefully defined assumptions. It may fairly be characterized as an external form of representation, indispensable for its own purposes but as contributing nothing directly to philosophical understanding. Like Descartes's material bodies, scientific phenomena may be said to have no insides. In dealing with them the mind moves, that is, on the plane of external existence and represents or pictures the relations between them in terms of a logic derived from space. The statement said to have been made by the late Lord Kelvin that he could understand a theory only when he was able to represent it in a drawing, illustrates well the point I have in mind. This seems to be the form of intelligibility toward which all the sciences look as their ideal.

But philosophy in its own domain has no concern with the bare form of existence. To achieve the form of intelligibility at which it aims it is indeed necessary that the mind shall understand the truth that is contained in this abstract standpoint, but it has also to free itself from the domination of existential imagery in order to rise to freedom and universality. It is, however, important to note that freedom from imagery is not identical with withdrawal from what is actual and concrete. The real world is the world of significant individual wholes constituted by reflective experience; not that of the superficial and conflicting impressions of practical life.

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MEASURES OF INTELLIGENCE AND CHARACTER

ONE of the most important questions that arise in connection with the widespread use of the intelligence examination is: What part does intelligence, as measured by such a test as the Army Alpha, play in success in an occupation? The report of the psychological examining in the U. S. Army provides valuable material pertaining to this question. The median intelligence for various occupations is given, together with the range of the middle fifty per cent. (*Mem. Nat. Acad. of Sci.*, 1921, XV, pp. 819 ff.). The range of intelligence within a given occupation is great and the overlapping among the occupations is also great, so that for pur-

poses of vocational guidance the occupations included in the study would have to be classed into about three groups, such as the professional, the clerical and skilled labor, and the labor class. For a finer classification other criteria must be adopted.

Two important indicators might be obtained from such data, namely, the minimum intelligence needed for a given occupation; and that degree of intelligence that one needs in order to be better than the average person engaged in the occupation. The value of this second indicator rests upon the assumption that the greater the intelligence of the individual the greater his success in any occupation. The data do not show whether or not this is the case. If intelligence were the only condition of success, then degree of success might be prophesied from degree of intelligence. But other determining factors must at least be sought.

The views expressed by the fourteen psychologists who recently contributed to a "Symposium on Intelligence" conducted by the *Journal of Educational Psychology* (1921, Vol. 12, Nos. 3, 4, and 5) show the increasing importance which is being attached to the so-called *character* traits. Although, in every case but one, defining intelligence so as to exclude the character traits, a plea was made for recognition of their significance in determining success. Even in college work where intelligence is considered a prime requisite, an important place is being assigned to these traits. The limit of correlation to be expected between an intelligence test and performance in college is probably between $+ .60$ and $+ .65$. Other conditions of success are physical health, interest, aggressiveness, social qualities, *etc.*, in short what are usually comprised in the term "character traits" (with the possible exception of physical health).

The statement has been made recently that there are certain kinds of work for which the optimum degree of intelligence is not the maximum degree, for example, in the case of messenger boys, sales-clerks and even elementary school teachers; and that to seek for the highest intelligence available may represent misguided effort. Such a view need not imply, I believe, that a low degree of intelligence is in itself really better for a given job than a higher degree of intelligence would be, but rather that one is more likely to find along with a low degree of intelligence those character traits that make for success and satisfaction in certain kinds of work. One might, for example, expect to find the traits that bring success as a scrub-woman or automatic machine tender and leading to satisfaction in these simple forms of manual labor accompanying a low rather than a high intelligence.

The study by Bregman (*Journal of Applied Psychology*, 1921,

V, 127-151) of sales-clerks and clerical workers shows that with a given group of applicants the more successful *sales-clerks* come from those that get a relatively low score in her series of tests; while the more successful *clerical workers* come from the group that gets the relatively high score. That is, these tests show a negative correlation with sales ability and a positive correlation with clerical ability. The tests used to make this distinction between sales-clerks and clerical workers are those commonly used as parts of intelligence tests, such as completion of sentences, tests of information and the various kinds of association tests. When their scores are combined they give somewhat of an intelligence rating. Now, is a relatively low intelligence required for success as a sales-clerk, or does one succeed in spite of low intelligence, because of the presence of other than intelligence traits,—the character traits?

Otis (*Journal of Applied Psychology*, 1920, IV, 339-341) found a zero correlation between success as a mill worker and performance in his intelligence test. He concludes his report thus: "Intelligence is not only not required in a modern silk mill for most operations but may even be a detriment to steady efficient routine work. What qualities are required remains to be sought. Whether they are measurable is doubtful. They may be stolidity, patience, inertia of attention, regularity of habits, *etc.*" The question may be asked: Is intelligence really a detriment in such occupations, or is it merely likely to have accompanying it certain character traits not suited to the task?

If the degree of intelligence possessed by an individual is to be taken as the indicator of the presence of certain desirable or undesirable character traits the correlation between the two must be high. A survey of the available material on the relation between intelligence and character traits shows that the correlation is positive but that it will probably not go higher than $+.50$. This correlation of $+.50$ accounts for the fact that one can find desirable character traits in persons of very low intelligence. If the presence of one can not be taken as the sign of the presence of the other, then both must be measured. It is quite important to find out the upper limit as well as the lower limit of intelligence for a given kind of work merely as a matter of economy of intelligence. But the need for simple character tests is just as great or even greater. The rate of labor turnover in certain types of work may well be expected to be greatest among the workers of high intelligence, until a measure of the other necessary traits is used along with the intelligence measure in selecting them. The following quotation from Fernald (*J. of Abnormal Psychology*, 1920, XV, 4 ff.) illus-

trates well the importance of measuring both intelligence and character in vocational work:

"Two adults, sane personalities, may be contrasted. The one, *A*, is a confidential clerk who has forged his employer's signature at least three times. He passes 'adult' intelligence tests with credit. His literary and æsthetic tastes are commendable and his thought mechanisms as discovered by tests and also as discerned in ordinary social and business intercourse are efficient and trustworthy. In conversation he does not justify forgery; but admits it is never justifiable. Yet his love for fast living, fine clothes, automobiles, costly companionship, *etc.*, have occasioned his failure by forgeries executed most skillfully. His knowing, inventing, associative and reasoning capacity is not at fault; but his capacity for resisting, for denying himself gratification and for acting on the promptings of his own good foresight are at fault. His weakness is one of behavior and in the field of character, and is not one of thinking, and so in the field of intelligence.

"The other personality, *B*, is a farm 'chore boy,' an imbecile as determined by intelligence tests (I. Q. 39), whose conduct record is good. He milks cows, carries wood and water, *etc.*, under direction and is in his contracted sphere of activity an economic success. He is well disposed toward his environment and habitually reacts acceptably to stimuli within his comprehension capacity. His weakness is a paucity of knowing, inventing, association, thinking, *etc.*, a failure in the field of intelligence and not in character. The findings of intelligence tests only in these two cases are that *A* is of at least ordinary intelligence while *B* is an imbecile. The findings of character study only are that *A* is legally an offender, an economic parasite and a social menace, while *B* is law abiding, a producer and no menace. Consideration of both fields of inquiry affords a far broader and more illuminating and therefore true basis of comparison than is available from the consideration of either field alone. In fact, conclusions drawn from investigations in either field to the exclusion of the other are misleading."

If measures of both these qualities are necessary for practical purposes, there would be an advantage in having a test that would measure both together—a measure of efficiency or adequacy or competence. Such a test would make unnecessary any sharp distinction between what is intelligence and what is not, and would arouse less criticism when applied in business and industry. The layman can not readily make such a distinction, while his crude inference that the more stupid one is the better he can do a certain job is likely both to arouse opposition and to introduce certain complications into the work of testing. The distinction is probably an arti-

ficial one, anyway, depending upon which of the many definitions of intelligence shall be accepted. In the "Symposium on Intelligence" mentioned above there was at least one psychologist who defined intelligence broadly enough to include what are ordinarily called character traits. Thus Freeman says, "I conceive intelligence to be a somewhat more inclusive capacity than is implied when it is used for a name for our present tests. . . . The mental capacity designated by the term intelligence seems to me to include besides the elements which are usually measured by our tests, certain other types of capacity which they measure not at all. . . . The characteristic which I am referring to is sometimes called temperament or moral character."

Thorndike, in an article on "Intelligence and its Uses" (*Harp-er's Magazine*, 1920, CXL, 227-235), keeps the layman out of difficulty by speaking of three intelligences that every one possesses, the abstract intelligence, the mechanical intelligence and the social intelligence. This last includes many, if not all, of the so-called character traits. The definition of intelligence as the "capacity for adaptation or adjustment to environment" would seem broad enough also to include the character traits. Fernald, in the article quoted above, suggests that intelligence may vary in *degree*, giving what are called grades of intelligence, and in *quality*, giving what are called character traits.

With some modification of content, method of administration, and with supplementary scoring such a test as the Army Alpha might be made to yield measures of neatness, accuracy, speed of decision, freedom from inertia, assurance, willingness to take a chance, tenacity or perseverance, honesty, *etc.* The total score from such a test would give a measure of efficiency or *competence*. By proper weighting of the different ingredients of the total score, measures could be provided for different occupations. Thus, an occupation for which a low degree of intelligence is adequate, but which requires honesty and steadiness could be measured by the efficiency test with the intelligence components and the character components given suitable weights. The result could be expressed in a total score for the occupation. It would be still more desirable to express the efficiency in the form of a profile, in which each component of the test, *e.g.*, ability to follow instructions, arithmetical ability, ability to work with symbols, range of information, honesty, assurance, *etc.*, could be separately reported and measured against a standard or pattern for any occupation.

Such a combined measure of intelligence and character, if used for vocational purposes, would prevent the waste of high grades of intelligence in positions where it is not needed and would enable

those of low intelligence to be located where their capacity would be adequate and where their character traits would make them successful. There may be many places in our business and industrial system where Fernald's case *B* would fit very well, and where an individual of a much higher intelligence might find the monotony intolerable. To refuse an occupation in business and industry to all persons with an intelligence under seventy per cent. of normal without examination of their character qualities may some time appear to be one of the greatest of human and economic wastes. In the individual of low intelligence but stable character qualities, may lie a partial remedy for the restlessness induced by extreme specialization and automaticity of work.

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THE WORD INTEGRATION AND A FEW REMARKS ON THE PALEONTOLOGY OF WORDS

TWO correspondents, Professors Wilmon H. Sheldon of Yale University, and W. A. Merrill of the University of California, have written me that "integration" has nothing to do with *gradior*, as I assumed it to have in my article "The Need of a New English Word to Express Relation in Living Nature." (This JOURNAL, August 18, 1921.) And since Merrill is a Latinist by profession, there seems nothing for me to do but to admit that at least I was "wrongly advised" as he considerately puts it. What makes the error the more troublesome to me is the fact that I do not remember the source of my advice, nor, so far, am I able to relocate it.

Professor Merrill also informs me that while the Latin *ferre* sometimes means, as I stated, bearing in the sense of producing, the producing is not the kind I meant. It never means producing in the sense of biological reproducing, I understand him to mean. It appears, consequently, that the etymological part of my effort to justify conferentiation as the new word of which our language is in need, was quite unfortunate.

It is, however, a satisfaction to be told by Professor Merrill that he sees no objection to the word I propose if I think it is needed; for, he says, "The etymology is of no importance, as no one thinks of an automobile as a self-mover."

Perhaps, then, I ought to be sorry that in this instance I did not follow, as according to my rule I should have done, the familiar advice Mr. Lincoln is said to have given in a lecture to law students: Never try to prove anything you do not have to, because you may thereby be driven into trying to prove something you can't.

But there is an aspect of the use of words which goes much deeper

than the question of the appropriateness of old words adapted to new needs. That is the question of the origin of new words. Their origin I mean, not in the linguistic sense, but in the psycho-biological sense; the sense, to wit, of the mental and physical needs to which the words correspond.

The word integration illustrates the point as well as any other. In defining this word the dictionaries note, of course, its relation to *integrare* and then to *integer*. And the verb *integrate*, it is usually mentioned, is related to the past participle *integratus*. *Integer* means whole or undivided, in the sense of being untouched or unhurt. And *integrare* means to renew or restore; and the participle *integratus* means renewed or restored.

Now in order that a thing may be untouched or unhurt, somebody or something which might touch or hurt the thing is clearly implied. A toucher or hurter is somewhere near by. Likewise a restoration necessarily implies somebody or something to do the restoring. The point is that integration relates to something being done, to an action—it implies a doer, an actor.

This reasoning is, I suppose, about the same that a philologist is likely to use in treating of the nature of words. But here comes in a consideration which, though of great interest to the student of human psycho-biology, does not, so far as I know, appeal greatly to philologists or at least to linguists. I refer to the usefulness of words in the sense of biological adaptation.

So far as I have noticed, when the linguist speaks of the use of words he has in mind the way they are put together to make spoken and written language, it being taken for granted that language is the human way of expressing ideas, feelings, *etc.* But to the modern biological naturalist, that is to say the naturalist whose hold upon the present-day conception of the nature and origin of the living world reaches clear through and all around the conception, words are among the innumerable agencies devised by the human creature to aid him in his stupendous task of maintaining himself upon the earth in progress and happiness. Words, and especially written words, are vital utilities to man, just as nests are vital utilities to birds. But just wherein is this utility of words—the original and primeval utility, I mean? In enabling men the more securely and clearly to fix in their minds, and the more easily to communicate with one another, the ideas engendered in their minds through their experiences with nature round about them. Viewed thus the verbal remains of extinct languages are as revelatory of the remote past of the human mind as the skeletal remains of extinct races and species are of the remote past of the human body.

Now as to the facts of nature upon which rest the ideas expressed

by the word integer and its kindred. It is the verbal forms, *integrare* and *integrate*, that are specially interesting from the standpoint of what I wrote about in my article.

Everybody knows to some extent, but only the naturalist knows systematically and profoundly, that there are two very distinct ways in which things are restored or made whole, these depending upon who or what the restorer or whole-maker is, and upon how the job is done. One of these ways is that of man working with his hands under the guidance of his mind; the other is that of nature working with the innumerable means at its disposal.

I have tried in another place (*The Probable Infinity of Nature and Life*, p. 33) to bring out this distinction between the creations of nature and art, in substance as follows: The human being has two ways of creating things. One way is by the use of its hands and brain. The other is by the use of its generative organs. The first way produces statues and paintings of other human beings. The second produces real other such beings. And by no possibility can the one way be substituted for the other.

Men restore automobile tires by half-soling them; and they make whole pumps and houses by manufacturing the parts and then assembling these and putting them together properly. Nature restores the humidity of the atmosphere by bringing into it in a finely divided state, water from the sea; and she makes whole crystals of salt in saturated solutions. But restoration and whole-making by these methods are far from all the methods by which restorations and whole-makings are accomplished. For nature restores worn muscles and brains by the assimilation of nourishment, and it restores branches of trees and tails of lizards when these have been lost by accident or otherwise. Further she makes whole new oaks out of acorns and whole new roosters out of hens' eggs.

These last-mentioned ways of restoring and whole-making biological naturalists have studied deeply and broadly, especially during late decades. And beyond question one of the most important results of their studies has been to make more definite and penetrating than before man's perception of the difference between living nature's way of restoring and whole-making and, on the one hand, not-living nature's way of doing these things, and on the other hand, man's way of doing them.

It is, apparently, just because we moderns have perceived these differences so much more clearly than the peoples from whom we have largely adopted and adapted our language perceived them, that we find involved there an idea requiring for its expression some such newly adapted word as *conferentiation*.

Professor Merrill makes a remark in his letter which indicates,

I believe, not only how far our predecessors had gone toward such perception, but also how much they fell short of the distance later generations have gone in the same direction. "The thought is common in ancient philosophy," he writes, "of breaking up the whole into parts and recombining them into something else—also whole, but a new one. Thus Lucretius (iii, 847) says that if the matter of our bodies were to be recollected again it would mean nothing because the chain of consciousness would be broken."

From the passage of *The Nature of Things* here referred to, and from others that could be pointed out, it seems to me clear that while Lucretius perceived distinctly enough the uniqueness of living bodies as contrasted with the elements of which they are composed, he perceived very dimly if at all the essentially transformative processes involved in organic genesis. Lucretius was, I think, far behind Aristotle in this. But even Aristotle knew, of course, only in the most crude and general way, the commonplace facts with us moderns of metabolism, growth, and development.

If Professor Merrill is right, as I do not doubt he is, in saying that *ferre* has no reference to production in the sense of organic genesis, then even differentiation is really outside the pale of living nature so far as etymology is concerned. "Arguing from the Latin directly," he says, "I should say that differentiate means to take apart . . . with an accessory notion of 'carrying away.'" According to this the actor, the taker-apart, would seem to be man acting with hands and brain. It would be man in his rôle as artist or artisan. And only by adaptive modification could the word be made to express the *diversification* which characterizes organic development. However, differentiation has been used and the use has become universal, in the terminology of organic genesis. By adaptive modification it has become thoroughly naturalized in the realm of living things. To this there is not, as I understand, the slightest objection.

By parallel reasoning conferentiation could be naturalized in the same realm to express the *unification* which characterizes organic development. And the biological importance of providing differentiation with its natural organic mate, is that the effort which has been widely made of late to pair differentiation off with integration is resulting in ideas that are not only confused but are genuinely harmful, owing to the fact that integration is already bound to disintegration as its natural inorganic mate.

One practical consequence of the general employment of integration in this inconsistent and inorganic sense, I tried to bring out in my essay. That consequence is the deterring effect such use has upon perceiving the real nature of the action of bodies or of parts

of bodies on one another in order to make the resultant new body truly organic or living. This action is so deeply reciprocal that (quoting) "while producing determinative change in [each of] the bodies, at the same time [it] leaves the individuality of these not only identifiable and unimpaired, but even improved relative to their former states." The sentence from which this is quoted begins "It is that relational action in living bodies which, while producing" *etc.* (as above).

It now seems to me that instead of conceiving this "relational action" as operating "*in living bodies,*" as though it were merely an incident to such bodies, we must conceive it to be of the very deepest nature of these bodies. Except for this peculiar reciprocal action apparently no body could possess any of the attributes of life.

I wish now to invite attention to another injurious effect almost sure to result from a general use of integration as the linguistic mate of differentiation. Since integration has long been generally accepted as the antithetic mate of disintegration, the common utilization of it in the terminology of human affairs would almost inevitably tend to set it in opposition to differentiation in the sense of inhibiting it. Or, otherwise stated, since all differentiation involves change, the tendency would be to make the principle of integration act as an inhibitor of any change. With the conservative type of mind, the idea of integration could easily become a new and powerful brake upon the wheels of human progress, since it would be the most natural thing in the world for such minds to believe any change whatever that did not chance to be to their personal liking, to portend disintegration rather than progress.

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BOOK REVIEWS

Russian Dissenters. FREDERICK C. CONYBEARE. Cambridge: Harvard University Press. 1921. Pp. 370.

Perhaps no group of Christian believers are more deserving of study for their psychology and their rites than are the Russian dissenters. Few indeed are the religions of Western Europe or America that are as picturesque or as removed from the common thought of the world. Yet it may be added that few considerable numbers of Christians have ever received less attention at home or abroad. Hitherto in English the chief source has been the descriptive account of them in M. Leroy-Beaulieu's *Empire of the Tsars and Russians*, and for this reason we welcome the closely historical treatment of Professor Conybeare.

Although the author modestly states that his work is a compilation, yet we can not help feeling that his knowledge of Bogomilism and the allied cults has enabled him to present admirably the striking similarities between these and the Russian sectarians. It is the more remarkable, therefore, that the book does not discuss the possible direct contacts between Russia and the Bogomils in the early centuries and the first organized antiecclesiastical organization of Russia, the sect of the Strigolniks which appeared in Pskov in the fourteenth century. Similarly we miss any description of the Judaizers, who were able to place on the metropolitan see of Holy Russia in 1493 a man who was almost a convert to the Jewish faith. We should also like to know the opinion of Professor Conybeare on the Armenian Martin whom later stories (probably apocryphal) regarded as the originator of the rites of the Old Believers.

Unfortunately the righteous indignation of the author at the stupid and tyrannical government of the Tsar has led him to be unjust to the Orthodox Church. He rightly emphasizes the dislike and the dismay with which the peasants greeted the centralizing policy of Moscow. He does not emphasize the cause of that policy. To him the Tartar invasion means that a savage people had wiped from the earth a peaceful and developing native civilization (p. 26). This has been a popular idea since the World War and the Russian Revolution. Centuries of bloody Civil War in Russia which culminated in the sack of Kiev in 1169 and the accounts of the old Russian slave trade luridly deny that the source of all evil lay in the autoeracy. It may well be argued that it was only the policy of autoeracy, bribery and servility inaugurated by Moscow with the blessing of the Church that succeeded in unifying Russia and saving Moscow from that permanent foreign control which ruined Kievan Russia for centuries. The Troublous Times and the occupation of the Kremlin by Poland in 1610 again brought Russia to the verge of ruin and rendered necessary the changes of the century, although the unhappy country did not have the trained leaders to undertake the work.

In the rough manner of his time Nikon endeavored to carry out needed reforms. If we read the virulent denunciation of the Patriarch on p. 19 and the criticism of his reforms on p. 42, we notice a contrast. Nikon fought to free the clergy from a humiliating position as the slave of the mir. He fought against a narrow nationalism which hated the Latins, loathed the Kievan monks and despised the Greeks. Avvakum and his followers were far less concerned that Nikon used a poor Greek manuscript than that he used a Greek manuscript at all. One of the chief problems was the decrees of the

Stoglav Council. This supported the contention of the nationalists, but is it "monstrously critical" for the Orthodox to doubt the validity of decrees passed in 1551 and invoked for the first time in 1642? The innovations of the Old Believers probably arose in the fifteenth and sixteenth centuries. It is hard to see how they could have originated during the period when all the higher ecclesiastics were themselves Greek, and the Church was absolutely an exotic growth (p. 3).

The same unwillingness to recognize anything but might as on the side of the Orthodox is a sad blemish on the entire work. The "jaundiced narrative" of Ivanovski (p. 115) denies the moral excellences of the thief and forger Bishop Epiphanius. The four bishops who succeeded him were so obviously of an unsatisfactory character that the author forbears to mention them.

The author has gone too far in his endeavor to deny or defend suicide by fire. The teachings of Avvakum (quoted in Anderson, *Raskol and the Sects*, p. 130) recommend it. The stikh of the Woman Alleluia ascribed this teaching to Christ himself (Porfirev, *History of Russian Literature*, Vol. I, p. 355). Finally M. Leroy-Beaulieu cites a number of modern instances (*op. cit.*, Vol. III, p. 320). It would be interesting to explain the purpose of Ivanov in starting one holocaust after another (p. 154). It is more reasonable to assume that he was seeking to make martyrs of his disciples or dupes.

The chapter on marriage is very full but again the author's enthusiasm for the sectarians leads him to veil in many words what may seem to be an unpleasant condition. The key to the entire question is to be found on p. 193. "The 'marriageless' sectary may not approve of unions concluded for the whole of life, but find it a burden. He aspires to another type of conjugal relationship, a type which more nearly approximates to the ancient Slavonic free union, dissoluble by the will of either party. He has scanty regard for the Byzantine type of family which has only gained currency in Russia during the last few centuries." Nestor and the early chroniclers declared that the early pagan Slavs practised free love and had no conception of family life. The Orthodox sacrament of matrimony and the life-long monogamy seem to have been inseparably connected in the minds of the Russians and the loss of one necessarily destroyed the other. Certain of the sectarians were able to develop the old-fashioned Protestant conception of marriage and were able to bring order into their life. Others endeavored to satisfy their consciences in various ways and we learn that many of the Raskol were living in relationships which even their own code would not approve (p. 209). These relationships were tolerated and we need only mention the

demoralizing influence of such manners. What part does this play in the rumors of various marriage innovations since the Russian Revolution?

Turning to the second part of the work, we note with regret that Professor Conybeare did not make use of the recent work of Bonch-Bruyevich, *Materials for the History and Study of the Russian Sects and Raskol*. In this there is published a large collection of the songs of the Dukhobortsy. We may add that many of the scholars of Russian religion, such as Vladimir Anderson, group the Dukhobortsy together with the Khlysty, and many of their documents, edited by Bonch-Bruyevich, testify to their belief in this similarity. They are certainly more closely related than are the Dukhobortsy and the Stundists. Finally Professor Conybeare does not mention the spiritual dynasty of the Dukhobortsy, one of their chief characteristics. Aylmer Maude in his work, *A Peculiar People*, describes in detail the *via dolorosa* leading to the emigration to Canada. He also reveals his disgust at the trickery of Tchertkoff and the leaders of the Dukhobortsy toward those who were helping the poor Russians. This omission relieves the author of mentioning the naked pilgrimages and other events¹ which present the "true soul of the Russian peasant" in a less favorable light.

The account of the Mystical Sects could also be improved by the use of the work of Bonch-Bruyevich. Their denial of the unique deity of Christ gains for them a certain amount of approval, though we should like to hear more of the succession of Christs among them. Professor Conybeare mildly remarks that some of their Christs may impose upon their followers (p. 343), but he really disapproves of no sectarian save the "obscene fanatic" Selivanov. This man was once a member of the Khlysty or "People of God" as they prefer to be called, and the violence of the Skoptsy can easily be interpreted as a reaction from unrestrained license in the parent sect. In this connection we may mention the career of Shchetinin. This man (the subject of a long study by Bonch-Bruyevich) founded the sect of the Chemreki, which was an acknowledged branch of the Khlyst movement. He openly preached religious immorality and maintained his position for some years. There have been many similar teachers, notably the famous Rasputin, who operated in Russian court circles. Apologists for the sectarians have usually denied that these men represented any element of the Khlysty, but in such a case they should group them as representative of a certain tendency perhaps connected with the Slavonic free union.

¹ The most recent of these was a threat by the God-man, Peter Verigin, to kill all the children of the community as a protest against the Canadian government. (*New York Times*, February 21, 1922.)

The author again has not sufficiently emphasized the importance which mystic anarchy has had on the entire movement. Most of the sects which have been opposed to the government of the Tsar were opposed not because it was autocratic, but because it was a government. The refusal of military service, the refusal of the oath of allegiance, the refusal to pay taxes, all recur with monotonous regularity in the accounts of these sects. The World War brought them to the attention of this Government (see the article of Dean Stone in the *Columbia University Quarterly*, Vol. XXI, p. 263). Their opposition to secular government does not render them opposed to autocratic rule by their Christ-ruler, and in the course of time it will probably be seen that these sects are less of a trouble in an autocracy than in any form of democracy.

We may well compare the Russian sectarian movements to a sea with certain main currents. On the surface of these currents are various waves which rise and fall in constant changing struggle. These waves are the individual sects. None of them has ever formulated any definite code; none of them, save the Austrian Hierarchy of the Popovtsy, has maintained a clear and distinct history similar to that of the leading Protestant sects of Western Europe. Most of them form sympathetic but disorganized groups with no external discipline and any movement is liable in different places to produce all types of leaders, from the pious efficiency of Denisov to the savagery of Selivanov. For this reason it is as impossible to approve their principles as a movement as it is to condemn their excesses as a sign of general decadence.

In conclusion we may say that the book would have been far more valuable had the author not been so animated with the belief that it is "the heretics and dissenters [of both hemispheres] who will point the way [to unity] and by their example shame formalists into true charity" (p. 258). He has brought together a great mass of valuable material, but his constant tendency to champion the cause of the dissenter and to omit or deny any aspects which do not prejudice us in his favor weakens the book. The reader should most certainly supplement this work with that of M. Leroy-Beaulieu, who has described the defects of the Orthodox Church of Russia no less severely, but has endeavored at the same time to write impartially of the different sectarian movements and to evaluate their real significance for Russia and civilization.

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Bibliotheca Chemico-Mathematica: A Catalogue of works in many tongues on Exact and Applied Science, With a Subject Index. Compiled and annotated by H. Z. and H. C. S. 2 Vols. London: Henry Sotheran and Co. 1921. Pp. 964.

These two volumes are made up of three booksellers' catalogues and an index. They form, however, one of the most available bibliographies of the history of modern science. In each of the three catalogues the authors are arranged in alphabetic order, and naturally a great many of the books entered are of little general interest. But the full and elaborate index, giving also the dates of the different works referred to, is a highly useful key to any one interested in the history of science. As is to be expected under the circumstances, the collection is very uneven as regards completeness. Thus there are no entries on Brownian movement, on the theory of quanta or on the algebra of logic, and almost nothing on statistical methods. Even when the bibliography is rather full as in theoretic physics, some of the very great and epoch-making treatises, like that of Bocovich which united the work of Newton and Leibniz, are missing. On other topics, however, such as the history of alchemy, the modern theory of solutions, or the history and theory of electricity, the lists are more adequate.

The many annotations to the titles, giving biographic and historical information, are as a rule rather interesting and lively. "The pioneers of science have never been of the dry as dust order." Students of philosophy may be surprised to learn that the common sense realism of Reid was originated by D. Abercrombie's *Academia Scientarum* or History of Natural Sciences, 1687; and it is instructive to learn that the authorship of a book on the *Varieties and Uncertainties of Artes and Sciences* landed Agrippa von Nettesheim in prison. As these annotations are generally based on secondary sources, some of them are rather misleading. Thus it is not true that the phlogiston theory retarded the progress of science. Like other false hypotheses it led to a great deal of new investigation and hence to the progress of science.

Perhaps the most interesting feature of these two volumes is the large number of plates giving portraits of the greatest of the scientists and facsimiles of the actual texts of the older books. The most cursory examination of these illustrations will give one an extraordinarily vivid sense of the intellectual vitality of previous centuries, and dispell the fashionable but foolish idea that before Darwin or Newton the world dwelt in utter scientific darkness.

The annotators, H. Zeitlinger and H. C. Sotheran, have not always made the most of their opportunities. I am tempted to give two instances. Colenso's *Algebra* is entered without noting that it

is by the same Bishop Colenso who upset the old biblical theology in England by his book on the Pentateuch in which his mathematical reasoning created great distress for those who regarded every story in the Bible as literally true. Colenso thus lost his bishopric on account of his mathematical proclivities. The second case is the entry of W. Carpenter's pamphlet on, *Water not Convex, the Earth not a Globe*, 1871. This is part of a famous law-suit. A wager having been made that the convexity of the earth could not be proved, Alfred Russell Wallace proceeded to do so with optical instruments on the water-level of a canal. The loser of the wager, however, refused to pay the bet. W. Carpenter was the dissenting referee, and his pamphlet illustrates how hard it is for experimental evidence to prevail over general convictions.

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JOURNALS AND NEW BOOKS

JOURNAL OF EDUCATIONAL PSYCHOLOGY. September, 1921. *An Experimental and Statistical Study of Reading and Reading Tests*: ARTHUR I. GATES (303-314).—First of three installments. Conclusions and summary in the November issue. *Constancy of the Stanford-Binet I. Q. as shown by Retests*: HAROLD RUGG and CECILE COLLOTON (315-322).—An examination of the reports of Terman, Cuneo, Garrison, Poull, Wallin, Fermon and Stenquist was made. The conclusion drawn is that "much confidence can be put on a single I. Q. if the examination is made by experienced and well-trained examiners who use rigorously the standardized procedure for giving the test." Recent studies, except those of Fermon and Stenquist, closely confirm Terman in his earlier statements. The comparison of the findings of Fermon and Stenquist with those of other studies throws great doubt on the validity of the examining which was done by their workers. *Constancy of I. Q. in Mental Defectives, according to the Stanford Revision of Binet Tests*: LOUISE E. POULL (323-324).—126 inmates of the Children's Hospital on Randall's Island, New York City, were retested. The interval between the first and second tests varied from six months to three years; age of subjects from 4 to 28 years; the I. Q. of the first test varied from 20 to 90. The subjects as a group did not deteriorate, the average change was an increase of + 1.28. The question of the constancy of I. Q. is not settled. A large percentage of the cases shows variations which operate to change the classification and in cases above the obvious imbecile type, only observation and retesting can discover

the individuals who require permanent supervision or institutional care. *Mental growth and the I. Q.*: LEWIS M. TERMAN (325-341).—The work of Dr. Doll is examined. "His own conclusions are so often either contrary to his facts or else irrelevant to them that verification is always necessary." The article is continued in the October issue. *Department for Discussion of Research Problems. Notes on Articles in Educational Psychology in Current issues of other Magazines. Special Review of Mrs. Burgess's Monograph on Silent Reading. New Publications in Educational Psychology and Related Fields of Education.*

Root, William T., Jr. A Socio-Psychological Study of Fifty-three Supernormal Children. (Psychological Monographs, Vol. XXIX, No. 4.) Princeton, N. J.: Psychological Review Co. 1921. Pp. 134.

Spiller, G. A New System of Scientific Procedure: Being an Attempt to Ascertain, Develop, and Systematise the General Methods Employed in Modern Enquiries at Their Best. London: Watts & Co. 1921. Pp. 441.

NOTES AND NEWS

To the Members of the American Philosophical Association, Eastern Division:

At its Annual Meeting, December 30, 1921, the American Philosophical Association (Eastern Division) appropriated a considerable part of its available funds for literary aid to European universities and scholars. The vote on the resolution was unanimous. The great need for books and journals on the part of foreign scholars impoverished by the war and its consequences impressed the Association when it was brought to the attention of the Meeting. From the editors among its membership it learned also of the many requests from abroad for gifts of current journals—requests which the several reviews have often met, but which as a whole their resources do not allow them to satisfy. Finally, it was felt that this was a form of international coöperation which all could approve.

The Association appropriated two hundred dollars—one third of its balance—for this purpose. In the discussion of the motion, the hope was also expressed that additional gifts of money or books might be received from individuals. The management of the fund was entrusted to the Committee on International Coöperation, which met immediately and appointed Professors Woodbridge and Cohen a sub-committee to take direct charge of the work. Arrangements

have now been perfected for the forwarding and distribution, without cost, of whatever we may be able to give. It is very desirable that any of our members who feel able to contribute, or to spare books or journals from their libraries, should communicate with the sub-committee so soon as may be convenient. In particular, it is desired to collect works representative of the more recent phases of American thought. In case of doubt, the sub-committee will be glad to answer concerning the suitability of any suggested donations. Checks may be drawn, and books forwarded to Professor Frederick J. E. Woodbridge, Columbia University, New York City, New York.

A. C. ARMSTRONG, *Chairman*,
FREDERICK J. E. WOODBRIDGE,
MORRIS R. COHEN.

To the Editors of the JOURNAL OF PHILOSOPHY:

In the interest of the freedom of discussion so essential to philosophy, I wish to protest most respectfully against the position of Dr. Parkhurst's animadversions on the paper I read before the American Philosophical Association. To question the evidence for that which is generally taken for granted is surely one of the functions of a philosopher, and this I tried to do to the best of my ability in reference to the popular belief in universal evolution, in the subconscious mind, and in induction as the essence of scientific method (I was very careful to discriminate, as Dr. Parkhurst does not, between universal evolution and Darwinian natural selection). If my questionings are based on ignorance or misapprehension, Dr. Parkhurst and other friends of these doctrines can readily correct me and thus render a great service to science by guarding others against similar errors. But to ignore my actual arguments and to deplore them "chiefly for the improper use to which they might be put" by obscurantists in Kentucky or in a New York newspaper, seems to me to introduce or revive a most unwarranted and dangerous restraint on the freedom of philosophic discussion. Surely the danger from misuse by temporarily popular obscurantists (and what utterance of man is guaranteed against such misuse?) is much less serious than the danger from philosophers suppressing their opinions, even before their colleagues, lest obscurantists misuse such expression. Would not such a policy be itself literally the veriest obscurantism?

Similarly, because philosophy has nothing to gain by introducing into its discussions the passionate intolerances of the marketplace, it seems to me unfortunate to have philosophic papers characterized in moral terms such as "cynical," etc. In view of the uncontradicted

agreement (expressed by Prof. Pratt) which my paper received at its reading, a reasonable respect for our fellow-philosophers' power to express their dissent makes it doubtful whether many besides Dr. Parkhurst felt a disapproval so intense that "nothing short of a pitched battle would have promised satisfaction." But in any case the interest of philosophic clarity would have been better served by refuting rather than merely condemning my contentions.

Finally, Dr. Parkhurst sets up the authority of Prof. Bateson. Bateson is undoubtedly a great authority on biologic variation, but not on philosophic discussion. In any case I may retort that it is possible to have faith in experimental science and have little use for the concept of evolution—witness the work of our leading experimental biologist, Jacques Loeb, whose condemnation of the scientific use of the concept of evolution is much more drastic than anything I ventured to say. I might similarly cite the position of our leading anthropologist, Professor Boas, with reference to social evolution.

It is too bad that we live in a world in which the advanced scientific thought of sixty years ago has not yet penetrated to some of the multitude. But we must not suddenly become panicky on account of this, and limit our own freedom of thought and expression and prevent intellectual progress. Whatever the Mosaic cosmology may be to the multitude, it is undoubtedly a myth to most philosophers. But the refusal of philosophers to recognize the mythical character of popular doctrine of universal evolution, has led to unjustifiable dogmatism by dulling the critical edge of the sense for evidence. Dr. Parkhurst may call this view skepticism or even obscurantism, but I see no reason for making it esoteric.

Respectfully yours,

MORRIS R. COHEN

The New York Branch of the American Psychological Association met on Monday, April 24, in Schermerhorn Hall, Columbia University. The following papers were read:

Dr. F. Lyman Wells: *A Method of Memory Examination adapted to Psychotic Cases.*

Dr. Beardsley Ruml: *Notes on Applied Psychology.*

Dr. Clara F. Chassell: *A Test of Ability to Weigh Foreseen Social Consequences.*

A meeting of the Aristotelian Society was held on March 20, 1922, Professor G. Dawes Hicks in the Chair. Professor R. F. A. Hoernlé read a paper on "Some Byways of the Theory of Knowledge," a synopsis of which follows:

In the attempt to give scientific precision to their language, some philosophers have introduced into the theory of knowledge a new distinction, *viz.*, the distinction between *first-hand* knowledge and *second-hand* knowledge (or knowledge mediated by symbols), alongside of the current distinctions between "knowledge by acquaintance" and "knowledge by description," or "immediate acquaintance" and "thought." Acquaintance and immediate of language and of analysis, whereas first-hand knowledge (*e.g.*, that experience are, in current theory, commonly characterized by absence of a botanist engaged in research) may involve any amount of analysis and symbols of all sorts. Yet there will be no divorce of description from acquaintance, or of thought from immediate data, but the data will be ordered and will acquire significance, and their meaning will come to the investigator as fulfilled and realized in a sense in which it can not do to one who merely reads his account at second-hand. The choice of terminology is no mere matter of words, for it is a choice of meanings, and therefore of the qualities and relations which we affirm as "true" and "real" of the object under discussion. Definition does not help, for it leaves open the question whether anything bearing the character defined exists. The suggestion was made that a comparative and systematic study of philosophical languages is much to be desired, as a preliminary to rational choice, and, in any case, as a help to better mutual understanding.

THE JOURNAL OF PHILOSOPHY

MR. RUSSELL'S PSYCHOLOGY

THIS discussion of certain points in Mr. Russell's *Analysis of Mind* is animated by no hostile spirit. I fully recognize that criticism of a view with which one has nothing in common is likely to lead to nothing but an unprofitable wrangle; but I seem, to myself at least, to possess many vital points of agreement with Mr. Russell.

1. We are agreed, I think, that philosophies should be, and are, experiments with life, and both hold our own in this experimental spirit.

2. We are both, in consequence, willing to learn from experience in the widest sense, and in every possible way.

3. I recognize in Mr. Russell, not only a writer whom it is always a pleasure and a profit to read, but also a philosopher who is eminently clear-headed and honest—both of them qualities which are by no means as common as it is polite to suppose. To discuss a philosopher who plays with his cards on the table and scorns to keep an additional set of trumps up his sleeve, and moreover plays them for all they are worth, can not but yield a good game, clarifying and instructive, in which the victory may be disputed to the end.

4. *The Analysis of Mind* is to me a most welcome recognition of the need every serious philosophy should feel of coming to terms with psychology. So long as this need is not recognized, the present miserable state of the philosophic sciences seems bound to continue. Our logics must continue to be meaningless, our ethics and esthetics to be nullities, our metaphysics to be phantasies of personal idiosyncrasy, our psychologies to be servile and futile imitations of natural sciences, while the whole strength of philosophy is dissipated in intestine discords. The philosophic sciences, like the nations, must learn to coöperate, or perish.

But to coöperate they must be willing to make concessions on both sides, and explore every possibility of success, however novel and repulsive it may seem to our innate conservatism. It is no argument against Behaviorism or Psychoanalysis or Psychological Research that they shock our prejudices.

For this reason I can not resent even the parts of Mr. Russell's analysis which I most dissent from, and shall select for special con-

sideration in preference to the far more extensive portions of which I admire the substance as well as the form. I take no exception to his *penchant* for Behaviorism, which he has, very candidly, set down in part to personal bias in this very JOURNAL (Vol. XVI, No. 1). I am quite willing to grant that if Behaviorism can be shown to work, even as a method, it corroborates thereby its claim to truth: only its advocates should endeavor to show also that it works *better* than any extant alternative. If, however, it is associated with a psychological analysis which does not work at all and so points to a more radical correction than any which Behaviorism is in a position to offer, it encounters the suggestion that the whole *Frage-stellung* it shares with orthodox psychology may be mistaken. It may be necessary to trace the source of the trouble a long way back; it may be our duty to point out that it may not suffice simply to drop the antithesis of psychical and physical, which, however futile and unworkable it may have become in its present elaboration, was not originally a heaven-descended *datum* in the human mind, but a difficult achievement which performed definite scientific services. And unless we can get these services performed in some other way, it will not relieve our philosophic embarrassment to summon the behaviorist simply to club the mind into unconsciousness. In the end, however, I find I can pretty well accept Mr. Russell's estimate of Behaviorism. I agree that it does not result in an adequate account of the data of psychology, though it does excellent service in challenging the conventional descriptions of these data and in paving the way for their systematic reconsideration.

I am more inclined to deplore that Mr. Russell's own method of curing the defects of our existing psychologies should turn out to be so atavistic. It takes the form of a reversion to a type of psychologizing which has had a great past, but should have no future. One had hoped that in spite of its intrinsic plausibility, attested once more by Mr. Russell's conversion to it, it had been definitely antiquated. I refer of course to the psychological type of which Hume is the greatest exponent and the Kantian Criticism the most imposing monument.

The characteristic features of this psychology are (1) as regards its *data*, that it is highly pluralistic, (2) as regards its *method*, that it is abstract analysis in search of the "simple" and elemental, conducted from the standpoint of an extraneous observer. Both these assumptions, however, owe their undeniable plausibility, not so much to their inherent merit or proved success in describing the *explicanda*, as to the extraneous strength they derive from their consonance with common-sense prejudices.

1. This psychological analysis assumes that it can start with an indefinite plurality of entities or facts, out of which psychic structures can be built. Hume calls them "impressions" and "ideas," Russell "sensations" and "images"; but both agree that they are fundamental, elemental, and practically adequate for the construction of a psychology. Russell, for example, may sometimes be found to declare that his "main thesis" is that "all psychic phenomena are built up out of sensations and images *alone*."¹ Actually these structures do require (and employ) a minimum of mortar, both in Hume and in Russell. This is introduced under the names of "association," "causality," "memory," "expectation," and sundry "relations," such as "meaning." But their presence and activity are so little emphasized that they are even verbally denied, as in the passage just quoted, and they are supposed to have no special significance for psychological theory. The fundamental feature primarily recognized about a mind is that it is (or contains) a plurality, and that its unity is secondary and derivative. Consequently when the problem of its unity comes up, as in the end it must, this type of psychology has need of principles of *synthesis*, to compact together the atomic succession of events into which it has dissolved the mind. It ought, therefore, to be as grateful to Kantian *apriorism* for providing synthetic principles with such lavish prodigality as the latter should be proud to claim descent from the Humian "analysis of mind."

Not only, moreover, are the systems of Hume and Kant logically interdependent, but they are also derived, psychologically, from the same source. Both presuppose the common-sense analysis of experience and derive their real strength from it. It is because we all habitually take our experience as the product of impressions made on us by a plurality of external things that we find it so easy to accept Hume's psychology as its logical development. It is only at a much later stage of psychological reflection, when Hume's method has clearly failed to account for some of the most patent facts of ordinary experience, that we realize the need of raising the problem of psychological description *ab initio* and become willing to inquire whether an entirely different set of assumptions will not lead to a more adequate account. And then we speedily convince ourselves that the plurality, which common-sense, Hume, and Russell, all treat as a *datum*, is not present in the original experience, and is at best a construction resulting from a course of philosophic reflection.

2. As regards method, Russell's psychology possesses three characteristics which it is easy to overlook.

¹ *Anal. of Mind*, p. 279. Cf. p. 121. Italics mine.

(a) That his analysis should everywhere seek for the "simple" and the "element" is merely consequential on his assumption that the *data* are plural. He can, and must, believe that there are simple elements to be discovered, because he has assumed that the original *datum* is a *compositum* and not a *continuum*.

(b) He can assume this, because his method is *not* concerned with the actual course of mental development, but with an ideal description of its products. It takes an *adult* mind and rearranges its contents in a systematic and esthetically pleasing order. It does not take into account that of such accounts there may be a great number, and that neither their results nor their procedures need have any relevance, significance or value for the study of actual mental development.

For mental development is not a mere playground for theories. It is an historically given fact both in the individual and in the race. The only questions that should arise about it are as to what is the most complete and convenient description of what has actually happened. There should, therefore, be only a single history of this process that can justly claim to be authentic. A psychological "analysis" of mind, on the other hand, is not thus strictly tied down to a course of happening. It can take an actual mind and describe its contents in whatever language it prefers. It can choose the standpoint from which it analyzes, the direction in which it looks, the terminology it employs, the terminals it reaches. And all these may be varied. Evidently therefore there may be many psychological analyses of mind. They may differ widely in esthetic merit, elegance and ease, and yet may all fulfill the function of "analyzing" mind. But there will be *no* antecedent guarantee that any of them will have any affinity or relation to any history of mental development.

(c) The moment therefore an "analysis" is required to comply with other than esthetic conditions and to conform to the facts of psychic development, it ceases to be a matter of indifference from what standpoint, with what methods, and with what purpose, we manipulate the mind. It will make a great difference, *e.g.*, whether we conceive ourselves as agents or as spectators, and describe the subject-matter of our psychology as an *Erlebnis* or as an object to be contemplated by an extraneous observer. The latter (if he can allow himself to forget that he is observing with his mind) can very well come to doubt whether there are minds to observe. For the objects he is observing are all of them physical, *i.e.*, bodies performing actions called "*intelligent*"; but he can quite well ascribe their intelligence to habit, instinct and "*mnemonic causation*," without any mention of consciousness, desire, will, or purpose.

This is the method Mr. Russell employs with much ingenuity and success. He is moreover well aware of what he is doing. He repeatedly confesses that he is "a trained observer with an analytic attention" "viewing man from the outside" (pp. 298, 255), who admires the method of behaviorism, though he can not quite admit that "the analysis of knowledge can be effected entirely by means of purely external observation" (pp. 230, 157). But even when he takes his stand within the soul, he is still playing the *observer*. He is ruthless, therefore, towards "logical fictions," like the "subject," which are not revealed by observation (p. 141). He is also aware that his method is anything but naïve, that his "*data*" and "particulars," "sensations," "matter," "perspectives" and "biographies" are anything but experiences of the plain man and are really highly sophisticated and elaborated creations of theory (p. 298).

What unfortunately he does not appear to recognize is *the existence of alternatives* to his procedure, which are at least as capable of apperceiving the facts, of satisfying common sense, and even of appreciating behaviorism. Mr. Russell's blindness to these alternatives is so remarkable that I must make an effort to describe them and to show why and where they may be regarded as definitely superior to Russell's "analysis."

1. It may be pointed out that an external observer is not well placed to appreciate the biological significance of intelligent action. An intelligent act is after all one that is related to the life, aims and welfare of the organism which performs it. It is essentially a salutary response to the stimulus of a vital situation, in which an unintelligent response might be fatal. Hence the simplest and easiest form of such response must be adopted as our unit, if we really mean to trace the history of mental development, and not merely to amuse ourselves with fancy analyses. This obvious consideration at once non-suits all the "elements" of the ordinary psychologies. "Sensations," "cognitions," "conations," and "feelings," are all equally hard to justify as occurring in fact. They not only seem to be *ex post facto* fictions of theory, but fictions that can not possibly be conceived as original constituents of a functioning mind. For the simple reason that the simplest response accompanied by consciousness implies the presence and coöperation of them all. No actual psychic process can conceivably be pure "cognition" or mere "willing" or bare "feeling." No mind that is biologically viable can possibly be constructed out of the "elements" which are postulated in the traditional psychologies. A biologically possible analysis can not start from anything less than the whole process involved in an act, *viz.*, a response to stimulation which is salutary, or harmful, and is selected accordingly.

On the other hand there is no reason why such a response should not be treated as a case of behavior. We may therefore concede to behaviorism that it is a legitimate subject of inquiry how far behavior is conscious and involves real understanding. There is really far more affinity between behaviorism and pragmatism (as the case of Dewey shows) than between behaviorism and Humism. Only the biologically minded pragmatist will want to know why, if conscious activity exists and can be detected, psychological description should be bound to abstract from it. The plea that the method of natural science abstracts from it and assumes the standpoint of the external observer, is not convincing. For in dealing with animals and atoms no other standpoint is accessible. But in the case of psychology we happen to have direct access to the inside of the subject. Being agents ourselves, we can tell what agency feels like. Is it not then fatuous to contend that its nature can not be known? Of course the term "knowledge" can be technically restricted to what is visible to an external observer; but to restrict psychology accordingly would merely be to argue in a circle. Actually the psychologist has a choice between the two standpoints; he can occupy either, and even if he finds that of the agent more intimate, fruitful and congenial, he can eke it out with external observation when this seems expedient.

2. He has a similar choice in conceiving his subject-matter. He is not bound to postulate that a plurality of "sensations" or "particulars" shall be his *datum*. He may conceive his *datum* as a *continuum* which is gradually and progressively differentiated into a plurality. Only, if he does, he must make the corresponding changes in his formulation of psychological problems. He must no longer represent the discovery of "simple elements" as the aim of his analysis, but must treat the mind as a real entity, never less than a complete organism even in the earliest stages of its growth. And withal he should give up the search for "synthetic principles." For, as his mind never gets dissociated into atomic "sensations," it does not need to be put together again. Principles of *discrimination* are what he will need in order to analyze his initial *continuum* into a number of distinct aspects—the "things" of common sense. Thus what is *datum* for one method will be result for the other, and the continuity, which the one labors vainly to attain, the other can take for granted.

Upon trial, this alternative method develops several advantages.

(a) It is much easier to derive the apparent plurality in the mind than to construct its unity, and the latter task has proved too much for the acutest philosophers of the last two centuries. If we postulate a dust-heap of sensations or "manifold of sense" as the

basis for our reconstruction of a "mind," we set out on a search for an elusive "synthesis." We not only have to put together our disjointed jig-saw puzzle into a coherent picture, but have to make its parts cohere. And this the synthetic principles alleged can not do. Alike whether they are alleged with the skeptical smile of Hume, with the naïve complacency of Kant, with the candid bewilderment of Mill, or with the airy *insouciance* of Russell, they inevitably provoke the question—"But how *do* your synthetic principles bind together the dissociated mind-stuff you supply them with?" And the inevitable answer is "Nohow!" Hence Hume, after trying whether "associating ideas in the imagination" would not do² and furtively smuggling in a "feigned" self under the name of "memory," conceived as a faculty for "raising up images of past perceptions" that "not only discovers the identity but also contributes to its production,"³ gaily confesses his bankruptcy. "If perceptions are distinct existences, they form a whole only by being connected together. But no connections among distinct existences are ever discoverable."⁴ So Hume despairs of explaining "the principles that unite our successive perceptions in our thought or consciousness." Mill, after recognizing associations, memories and expectations, is distressed to find that they commit him to the "inexplicable fact" that a mind "which *ex hypothesi* is but a series of feelings can be aware of itself as a series."⁵ Kant never himself got clear enough about the relations of his epistemology to psychology to see the difficulty: but the only sense in which he can be said to have answered Hume is by failing, himself also, to solve Hume's problem. Of his followers a few have displayed some uneasiness when confronted with the awkward question how the *a priori* "forms" could make sure of encountering no recalcitrance from the "matter" of sensation; the majority realized that the safest way of dealing with an unanswerable question was not to try to answer it. So they kept mum about it.

Russell does the next best thing; he skips lightly over it to start with. The "subject" or "act" is "unnecessary and fictitious." He can discover nothing "empirically corresponding to the supposed act,"⁶ and "theoretically I can not see that it is indispensable." It is the "ghost" of the subject, which in turn "once was the full-blooded soul." Persons are just "bundles," and not "ingredients

² *Treatise* (Selby Bigge), p. 259.

³ *Ib.*, p. 260-1.

⁴ *Ib.*, p. 635.

⁵ *Exam. of Hamilton*, p. 247.

⁶ *Analysis of Mind*, p. 17.

in the single thought."⁷ No "observation" reveals the "I," which is a linguistic convenience, and a logical fiction.⁸ After that, he appeals to association, memory and expectation, like Hume and Mill, continues to use the personal pronoun like every one else, and speaks nonechalantly of the "assent" and "attitudes" involved in belief.⁹ But he has established no right to any of these things, and has *not* laid the ghost of the full-blooded soul.

If on the other hand we refuse to murder the full-blooded soul without a trial, we need have no trouble with the unity of mind. We shall be entitled to take it as an organic whole (blood and all!) and to consider merely how we can cut it up *without* hurting it. This we shall do by confessing that we were "analyzing" it in thought alone, admitting that, originally and as given, it is a *continuum* and the source of all continuity, and by suggesting principles, not of *synthesis*, but of *analysis*. It will then only remain to be explained why and how the soul is taken as a plurality and broken up into "faculties" and "elements." And this is quite easy. When, as is frequently the case, we are not interested in all of it, we can neglect the whole and single out "aspects" or "parts" which seem to us significant and relevant to our momentary purpose. But it should be clearly understood that this methodological dissection rests upon abstractions and fictions. We do not really split up the soul, and in no wise detract from its working unity, as any one can convince himself even in the act of "contemplating" his feelings or his past. And when we have done contemplating our selected aspect, it is quite easy to get rid of it again. We have merely to let it sink back into the continuous background, out of which it was lifted and from which it was never really separated. Our recognition of its plurality, therefore, never endangers the soul's unity.

(b) Neither need our recognition of unity enough in the soul to enable it to function as a mind prejudiced whatever plurality it may be empirically expedient to recognize. For it does not follow that plurality is an illusion, because it is not an original *datum*. This only proves it secondary in an epistemological, not in an ontological way. Plurality may yet be as real and copious, as vital and important, as it is found to be. No metaphysical question is prejudged or prejudiced. It is only contended that plurality is not given, but arrived at, and it may be all the better for that.

Moreover, Mr. Russell himself ought to assent to this contention. For he also admits that by far the greater part of the plurality he

⁷ *Ib.*, p. 18.

⁸ *Ib.*, p. 141.

⁹ *E.g.*, *ib.*, pp. 233, 243.

recognizes is not a *datum* in the sense of being initially given, but is a secondary product of scientific elaboration. This comes out well in his account of the "ultimate brief existents that go to make up the collections we call things or persons."¹⁰ All such "particulars," his "ultimate simples," whether "the ultimate data of psychology" or "physical objects," are "constructed or inferred."¹¹ For, strictly, *data* "do not mean the things of which we feel sure before scientific study begins, but the things which, when a science is well advanced, appear as affording grounds for other parts of the science," and presuppose "a trained observer, with an analytic attention, knowing the sort of thing to look for and sort of thing that will be important."¹² Only one little addition is needed to make this statement entirely acceptable to an *activist* psychology of the sort I am advocating. Mr. Russell should have noted also that a *datum* need not be a "fact," nor be expressed in a "proposition of which the truth is known without demonstration,"¹³ because it is enough that it should be *taken as fact*, and that its truth should be assumed for the purpose of the argument. For while hypothetical reasoning has just the same formal features as assertoric, it is only by taking them hypothetically that logical forms become significant and valuable.

I welcome also Mr. Russell's doctrine of "perspectives" and "biographies" so far as it breaks up the unity of the physical object. This should not only facilitate a recognition that the dichotomy of experience into the psychical and the physical is an artifice, and may well be a fiction, but should also moderate the blind and somewhat fanatical attachment of many realists to the methodological constructions of the sciences. But I think it should be added that the composition of a single object out of a multitude of "perspectives" seems to be a legitimate process which is pragmatically justified in a way in which the decomposition of a "mind" is not. For practically, *i.e.*, as agents, we need to recognize the plurality of *things* and the unity of *souls*.

(c) It is moreover a "theoretic" advantage also to curb the mob of "analytical" fictions which have too long been allowed to run riot in psychology. In particular, Mr. Russell's accounts of "sensations" and of the cognitive function of "images" afford a welcome opportunity for the suppression of these fictions. For he is well aware of their artificial character and of the impossibility of justify-

¹⁰ *Analysis of Mind*, p. 193.

¹¹ *Ib.*, p. 300,-105.

¹² *Ib.*, p. 298.

¹³ *Ib.*, p. 297.

ing them as *data* of immediate experience. He sees that they are constructs and can be *data* only in his "strict" sense, though hardly how futile their construction is. Thus he admits that "the sensation is a theoretical core in the actual experience; the actual experience is the perception,"¹⁴ enriched by "mnemic phenomena." Defining then "sensation as the non-mnemic elements in a perception," we see that "the core of pure sensation is only to be extracted by careful investigation,"¹⁵ and that "we have to pare away all that is due to habit or expectation or interpretation."¹⁶ Still he sticks to it that though "in any other science than psychology the datum is primarily a perception, in which only the sensational core is ultimately and theoretically a datum" and "an ideal observer" has to be "postulated" to "isolate the sensation and treat this alone as datum,"¹⁷ yet "there certainly is a sensational core."¹⁸

I disagree on principle. Mr. Russell has described sensation as a pure fiction, though he has made its formation scientifically intelligible. The pure sensation is clearly *not* a fact of immediate experience, and could not conceivably become such a fact. For if we conceived it as occurring once, we should at once have to add that it could never occur again. On its recurrence it would at once be colored by the results of the first experience, even though these were not actually remembered. It is, therefore, a pure creation of psychological theory.

And the theory which generates it is optional and unnecessary. We need not even accept it as a scientifically constructed "*datum*." If we seriously attempt description of actual experience and explore the alternative possibilities of scientific construction, we can perfectly well rest content with "perceptions" as ultimate facts which function as "elements" only in "biographies." That will mean merely the adoption of an activist method in psychology, and a tardy recognition of the personality which it was usual to abstract from. But the reason for this abstraction was merely that the other sciences all appeared to make it, and that the psychologists were anxious to fall into line. But recent developments have revolutionized the situation. "Biographies" are no longer restricted to psychology, and "perspectives" to art; science finds it possible, and even necessary, to recognize them. The chemist has for some purposes to take into account the history of the stuff he handles, to consider whether it

¹⁴ *Anal.*, p. 132.

¹⁵ *Ib.*, p. 139.

¹⁶ *Ib.*, p. 140.

¹⁷ *Ib.*, p. 299.

¹⁸ *Ib.*, p. 140.

is thorium-lead or uranium-lead and in what proportions, and to allow for the "mnemic phenomena" it displays. The physicist must *locate* the events, and *date* the localities, of his observations, and may presently find, not merely that "man is the measure" of everything, but that *no* thing can be measured except in its own space and at its own time, and ultimately, perhaps, by its own leave.¹⁹ That is the meaning of Relativity.

Consequently it has become timely to suggest that *perceptions* are the real experiences, and are always involved in a biography, which it is well to ascertain; also that psychology need not substitute any fictitious "*data*" for these facts. After the deposition of "sensations" from their preëminence, it would no longer seem obligatory to inflate the status of "images," and to attribute to them an importance which they do not empirically appear to possess.²⁰

Thus the activist interpretation in psychology may justly appeal from the sordid past of the sciences to their dazzling prospects. It should not, however, neglect to fortify itself against some of the more obvious misconceptions. It should not, *e.g.*, plead guilty to the charge of recalling from the limbo of discarded errors the simple soul-substance of rationalistic metaphysics. For this may justly be condemned on the ground that it involved a passivist conception of substance, modelled upon observation of the external world, and utterly alien to the self-maintaining energy of psychic life. It made the soul into a thing, not into a person. Divorcing its substance from its "accidents," it could account for none of its empirical manifestations, for none of the plurality and variety in its functioning. The *a priori* sort of unity it postulated was utterly useless and incompatible with the "dissociations" which, empirically speaking, are more or less normal in the souls we actually know.

The activist theory, on the other hand, though it repudiates atomizing artifices, can make room for any sort and amount of plurality that do not destroy all unity, and are in fact required. It rejects only a pluralism so complete that psychic continuity becomes unthinkable. It demands only that an adequate psychology should face the fact that some at least of our psychic contents coagulate into or inhabit a "self" that says "I" to them and calls them "mine." Also that, to all appearance, they *really do belong* to it. This last requirement also is essential, and is often overlooked. Transcendentalism, for example, fails to solve the problem of the self, because its Ego is only a universal function that does not really

¹⁹ Mr. Russell, quite rightly, points out that not only *living* things but *all* have biographies (p. 129).

²⁰ As I have shown, against Mr. Russell, in *Mind*, No. 116, pp. 693-4.

cohere with the psychic contents it "apperceives." Instead of being any one in particular the "I" it deduces might just as well be the Devil or the Absolute.

In conclusion let me say that the questions I have raised all, I believe, affect the fundamentals of Mr. Russell's system; for in a consistent philosophy these are the parts which most demand attention, and are most worth discussion.

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"IMPLICATION AND LINEAR INFERENCE"

MIGHT I say a word on one judgment and its corollary in the courteous and appreciative review of my book in this JOURNAL by H. T. Costello?

The point is that he describes my illustration of self-evidence by the proposition that two straight lines can not enclose a space, as "unfortunate." The reason is, I gather, that experts do not now admit this proposition to be self-evident. And what I want to maintain is that thus it becomes a far more fortunate illustration of my argument than I supposed it to be.

Obviously it is involved in my notion of coherence that theoretically and in principle self-evidence is a matter of degree. There are plenty of propositions no one would trouble to interfere with, but, technically, there is none which has in itself absolute self-evidence. I asserted this position in my *Logic* and applied it to the "Law of Causation," and also showed that the interpretation of the "Laws of Thought" was "relative and ambiguous." Therefore, having later made a concession for the sake of argument, and undertaken to show as a limiting case of my theory a proposition which I believed nearly every one would feel as self-evident, I am fortunate, and not unfortunate, when my reviewer batters down for me the wall I was trying to breach and tells me that the proposition, though constantly taken for self-evident, is not self-evident at all. That is to say, in the light of a wider or more precisely analyzed whole of experience than mine, its supposed necessity does not stand examination. This is quite natural, and of course is a strong support to my view, which was originally formulated owing in part to some hints of Lotze in the same direction which I thought were probably out of date today, and so did not produce in the discussion in my book.

I proceed to the corollary. The reviewer's judgment that the illustration is unfortunate establishes to my mind the point that he

does not follow me in apprehending the test of coherence as involving a genuinely complete empiricism and only rejecting one that is arbitrary and partial. He does not see how (as, *e.g.*, Husserl points out) self-evidence is relative to the relevant whole of experience. Thus I read in the review (p. 416): "Looking upon the process as an internal dialectic of coherence within thought, they slur over the empirical checks which actually knock a thought-process into shape by unexpected blows from without itself." So (p. 417): "Only empiricism can select the true one."

Mr. Russell is in the same mythical tradition (*Analysis of Mind*, p. 268, treating expressly of the coherence method). "The attempt to deduce the world by pure thought is attractive.—But nowadays most men admit that beliefs must be tested by observation, and not merely by the fact that they harmonize with other beliefs. A consistent fairy-tale," *etc.*

And Mr. Arnould Reid in the *Philosophical Review*, January, 1922, treats perception as a test other than and external to "coherence."

They must all, surely, be speaking of something much less simple on one side, and much less fundamental on the other, than what I am talking about. As early as in the concluding chapters of *Knowledge and Reality* (1885) I pointed out in detailed analysis the obvious fact that every precise perception and every scientific observation is in itself a crucial experiment demonstrating that inference is by coherence. There *is*, therefore, no alternative method. The human mind in the pursuit of truth works in no other way. The simplest and most classical analysis of the facts, apart from the many well-known passages of Mr. Bradley and others, is, I should say, in Nettleship's *Logic Lectures* (*Remains*, Vol. I, pp. 181 ff.).

We always test a sense-perception as Macbeth tested his vision of the dagger, by trying if it brings with it something else we expect it to bring. The mind is potentially a system, and puts its questions, or demands its answers, in systematic form.

This characteristic procedure has nothing directly to do with any further question about the ultimate incompleteness of truth. It has nothing whatever to do with ideas of an internal dialectic, of coherence within thought, or with deductions by pure thought, or with consistent fairy-tales, or with a contrast between thought and empirical checks or perception or observation. Does no realist to-day think it worth while to consider what goes on in any careful perception or observation or on what its precision and truth value depend? It is really as if the hoary jest of our childhood about the German who evolved the camel out of his moral consciousness were

hanging about the minds of realists, and prevented them from attending to what students of actual working logic are talking about. I am much inclined to think that some obsolete superstition of the kind is actually at work.

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THE VERIFICATION OF STANDARDS OF VALUE

IT is a familiar contention of pragmatism that the truth as well as the value of ideas is to be judged by their consequences in action. This theory has been applied by Professor Dewey to the subject of practical judgments and moral standards. "The truth of practical judgments," he writes, ". . . is constituted by the issue. The determination of end-means (constituting the terms and relations of the practical proposition) is hypothetical until the course of action indicated has been tried. The event or issue of such action is the truth or falsity of the judgment."¹

In conduct "principles, criteria, laws are intellectual instruments for analyzing individual or unique situations."²

Generalized and classified goods are tools of insight, and in ethics "validation, demonstration, become experimental, a matter of consequences."³

Up to the present the advocates of this theory have been mainly occupied with defending its central thesis against the formalism of older ethical methods. They have accordingly made little if any attempt to apply it in testing specific current ideals and standards of value. They have rather been disposed to avoid such an attempt, on the ground that it would involve the very failing of ethics which they attack, a tendency to excessive and arbitrary generalization. Art and practical conduct, therefore, rather than science, have seemed to them the proper fields for developing and testing standards.⁴

Such procedure, however, is subject to the obvious limitations, recognized by pragmatists, of all common sense thinking in comparison with scientific.⁵

The latter must no doubt abandon its claim to provide absolute

¹ *Essays in Experimental Logic*, p. 346.

² *Reconstruction in Philosophy*, p. 162.

³ *Ibid.*, pp. 169, 174.

⁴ Cf. John Dewey, *The Influence of Darwin on Philosophy*, p. 71; *Essays in Experimental Logic*, pp. 374-381.

⁵ Dewey, *How We Think*, ch. XI.

rules for conduct. Yet, granting this, the possibility remains that some of the conceptions for which it has claimed too much authority may contain *as hypotheses* a measure of truth and value under certain conditions; that the power and scope of experimental science, furthermore, may be utilized in developing and testing such hypotheses, on a basis of past experience and subject to the ultimate verdict of future events. Are there ways in which science can be so used without unwarranted generalizing?

It has been noted that pragmatic verification and valuation consist at least partially in discovering and comparing consequences. Any prediction of future results must be made largely on a basis of past experience or history. To this extent, then, the verification and valuation of standards are studies in the history of ideas, and are subject to no more dangers than attend all such historical narrative. In observing the past and present operation of specific standards, ethical research has thus a clear field before it.

Disagreement on the general nature, basis and authority of moral ideas is no obstacle to such research. It is clear, at least, that many ideas such as freedom, justice, happiness, growth and control are current in human thinking, and are often described as ends, ideals and standards, though conceived and used in different ways. Some denote abstract qualities in a catalogue of virtues, others the concrete objects of desire or contemplation; some are products of unreflective instinct and custom, others of moral theory; some are treated as absolute rules, others as objects of worship or hypotheses in experiment; some are individual, trivial and ephemeral, others racial, enduring, wide in application and in influence. But whatever their form and function, if they operate in human thought and conduct at all, science may attempt to describe their operation.

Such an attempt would imply for the procedure of ethical inquiry the examination of specific concepts, especially those of major scope and influence, rather than a study of value and value-standards in general; the treatment of these concepts as factors in conduct rather than as static theories, with emphasis rather on their application than on their formulation and justification; the observation of actual problems and decisions, with analysis of the part which standards have played therein. "What functions," the observer would inquire, "has this concept been intended to fulfil, and why? How has it carried out these functions, and what other consequences have followed?" The appropriate sources for such study are less in systems of ethics than in history, literature and applied science, where

standards are described, developed and followed in contact with events.

The difficulties in such an inquiry are obvious. To trace the history of any scientific concept is to deal, especially if the concept is old and much used, with a rather nebulous subject-matter. It begins, as a rule, at no assignable date, it has no continuous growth, as from seed to flowering, it has at no stage a clearly outlined identity, and it appears to the observer less as a unified intellectual instrument than as a place of entrance to a world of tangled theories. One contemplating such a history may readily feel the illusion of watching a shifting mist of words, without structure or sequence, and forget that each period may have been a serious attempt at describing stable facts or formulating persistent desires. Each participant in the history has probably felt the impulse, more or less conscious, to sharpen the outlines of his terms by cutting off unwanted accretions of meaning, then by adding his own commentary to set up a more lasting and unequivocal system of relations between names, ideas and reality. But the new definitions often prove scarcely less transitory than the theories of fact. Ideas are shifted from name to name, and rival theories marshal them in conflicting orders, until particular concepts lose all recognizable substance.

A single concept, as a recurrent theme in intellectual history, is accordingly no easy object to follow. At any given time it has probably some recognized name, such as "democracy," and the career of this name may be followed from its etymological origin or its equivalents in earlier tongues, through successive gains and losses of connotation, through various rôles in theory and up to its status in modern discourse. But this inquiry, though of use for some purposes, would fall short of the information required as data for verification—a story of the operation of the concept. For a standard, like any other idea, is more than a name, symbol or concrete embodiment. It is a complex of meanings, which the symbol binds together and points out, and the effect of such a symbol upon thought may include the influence of all these current meanings. Since they, rather than the name, constitute the standard, a history of the standard's operation must include their history, whether or not they have always borne the present name. A concept may be newly put together, but if it consists of older ideas, its history is a continuation of theirs. To attempt a disentangling of such threads, and an account of their intermingling with the rest of experience—other ideas, desires, emotions, the forces of environment—may well be a slow and dubious task.

Yet these difficulties are not altogether insuperable. The study of the history and influence of ideas, far from being considered im-

possible, forms a steadily increasing part of all historical writing. Though confused at times, ideas can achieve a degree of integrity, especially when as social ideals or scientific concepts they are persistently redefined. Some have been, furthermore, evolved through a fairly continuous development, or constructed out of elements whose antecedents are likewise recognizable. To describe the main outlines of the history of such ideas may prove to be in some measure possible.

In addition to study of past experience, the choice of hypotheses in conduct involves an interest in the future: not alone "how has this standard acted?" but "how may it be expected to act in other situations?" To whatever extent situations are unique, novel and surprising, future effects can not be clearly foreseen. But so far as past experience can be utilized, similarities detected and combinations of events foreseen, decision can be, and is in practise assisted by imagination—the construction of hypothetical situations and responses in advance of action. Can ethics thus estimate the probable consequences of standards under conditions not to be found in past experience?

Some attempt at such hypothetical reasoning is made in almost every scientific argument that attacks or defends a proposed policy, as in theories of government or economics. Its uncertainty in prediction is obvious, and it runs the constant risk, through the need of imagining conditions in a more simple and general form than they occur, of overlooking important contingencies. Yet it is a necessary part of any reflection that aims not at mere understanding of the past, but at appraisal and adoption of purposes. Such consideration by ethics of the major policies with which it deals is thus a logical extension of the procedure necessary in all applied science. If ethics is to achieve conclusions that are applicable in practise, it must attempt to forecast the probable consequences of following certain standards, in relation to certain typical conditions. In what kinds of situation, in other words, might a given standard be applied? What would be its probable effect, if certain other factors were present? What emotional, instinctive or habitual responses would it tend to stimulate? What rational inferences would it imply, and what alternatives in action would it tend to select and favor? What later consequences might then be expected?

The decisive step in verification still remains to be taken, even after past and probable future consequences are known. Consequences themselves may be subject to varying appraisal. Beyond certain limits, it can not be expected that this final step should be made. The pragmatic notion of truth implies abandonment of the

attempt at absolute verdicts, whether on a basis of consequences or not. Such verdicts would themselves require standards, and these latter also would be subject to dispute. No appraisal may be expected to result from the above research, then, except of a tentative and approximate nature, expressed in terms of comparison, and with reference to specific conditions.

A knowledge of the consequences of a standard does, however, provide data for appraising it by whatever other standards are accepted. In speaking of the truth of ideas, for example, Professor Dewey proposes as a test "that satisfaction which arises when the idea as working hypothesis or tentative method is applied to prior existences in such a way as to fulfil what it intends."⁶ William James's "real doctrine is that a belief is true when it satisfies both personal needs and the requirements of objective things. Speaking of pragmatism, he says, 'Her only test of probable truth is what works best in the way of leading us, what fits every part of life best and combines with the collectivity of experience's demands, nothing being omitted.'"⁷ "Truth as utility means service in making just that contribution to reorganization in experience that the idea or theory claims to be able to make."⁸

According to this test, then, a comparison between the intended and the accomplished or probable consequences would be tentative verification. More specifically, the standard in question may be found to rest upon self-contradictory arguments, or on an unverified belief regarding the effects of certain actions. It may be found to produce failure, discord and pain. Such conclusions may fall short, philosophically, of absolute verdicts on truth and value, but in intelligent conduct they have all the cogency of such verdicts, and more concrete meaning.

To know and compare the working of current standards, in other words, is to know their interrelation; to know which coöperate and confirm each other, which deny and conflict; to find areas of agreement and areas of dispute or ignorance. In practice this is equivalent to a recognition of certain main lines of conduct which are, though not certainly good, less questioned than others, and which illuminate by contrast the fields where discovery and innovation are more needed.

The choice of hypotheses in conduct is of course not confined to selection between ideals already formulated, or even to continuous

⁶ *Essays in Experimental Logic*, p. 320.

⁷ *Ibid.*, p. 324, quoting James's *Pragmatism*, p. 80; cf. also *The Influence of Darwin on Philosophy*, pp. 95, 150.

⁸ *Reconstruction in Philosophy*, p. 157.

and

development of them. Future experience may suggest conceptions which require to be expressed in entirely new terms, and to be regarded as distinct from the old. The science of ethics can doubtless aid in the process of discovering and interpreting the data for such hypotheses. But several considerations warrant present emphasis on the study of older concepts. They contain an accumulation of long experience with the chief activities of life, whose testimony has not yet been agreed upon. Future experience can hardly be quite discontinuous with the past, or produce ideals unaffected by it. The formulation of new standards can not confidently be attempted without some decision upon the validity of the old, and the problem of testing them when formed is not unlike that of judging older and more familiar subject-matter. Although the present situation in ethics, however, may suggest the need of attention to historic ideals, new and proposed conceptions as well may be examined with a view to discovering their actual and possible consequences in relation to other factors in experience.

Pragmatism and the empirical theories which preceded it have amply demonstrated the futility of rigid and premature moral generalizations. But a consistent ethical pluralism will not be content with wholesale rejection or neglect of all general standards. It will examine them separately and in comparison as possible instruments in conduct, to discover if some are perhaps more true in assertion and more useful in function than others. If the funded experience of the past concerning good and bad is to be made available for use in present action, the work of organizing it must be carried on by the sciences, such as ethics, which concern themselves with problems of value. And if these sciences are to accomplish more than destructive criticism and inconclusive description of social and psychological processes, they must undertake the systematic development and appraisal of hypothetical standards of value.

The following questions are possible specific modes of inquiry into the operation of a standard:

What are its general meanings as at present accepted, its definitions, descriptions, constituent ideas, implied assertions? Are they at present widely different, so as to make the standard ambiguous, and act in different ways?

What are their histories? How have they come together to form a more or less coherent conception? What associations have they had with other theories, problems, events and conditions?

For what functions has the standard (or its several elements,

if they have operated independently) been used or intended? As descriptive law or concept? As object of desire, admiration, contemplation, idealization, reverence, worship? As aim or policy? Immediate, ulterior, ultimate, *summum bonum*? As standard, criterion, guide in decision and valuation? Subordinate to others, or supreme? Absolute or hypothetical? What beliefs and aims are implied by so using the concept?

By whom has it been used? What sorts of people have rejected or abandoned it? When has this acceptance or rejection occurred? Under what circumstances? In what sorts of problem?

What factors have led to this acceptance or rejection? What instincts, habits, customs, preferences? Are these usual or exceptional? What environmental conditions have been influential? What beliefs, premises, evidence, inferences, have led to acceptance or rejection, especially in regard to the nature of the universe, of man and his place in it, and in regard to the probable consequences of certain ways of acting? Can these be judged as true or false?

What immediate consequences tend to follow its use? As actually applied? If consistently and thoroughly applied? If there is a difference what has led to it? What responses in emotion or action does it stimulate? What judgments and inferences does it entail? What effect has it in selecting between alternatives, in reaching decisions, choices, solutions? Does it indicate the selection of certain types of alternatives rather than others? Entirely, or on a basis of comparative amounts or degrees? What ones, and by what specifications? Does it select in use as it is expected to; *i.e.*, does it fulfil its intended function? Are its meanings and suggestions different in practise from its formal definitions? What other factors, organic, intellectual, environmental, coöperate to produce these results?

Are the situations in which it can be applied frequent, important, crucial, confined to particular times and places or lasting and widespread? For what types of alternative does it indicate no selection? What changes have taken place in its mode of functioning?

With what other standards does it interact, theoretically or practically? With what ones would it interact if consistently applied whenever possible? Does it tend to conflict with these? To what extent? With any margin of agreement? What has produced this conflict? Does the standard corroborate, agree with others? To what extent? As means, end, or in coördinate status? In what types of problem does it interact with others, and with what results? What are its relations to scientific knowledge other than value-standards?

What later consequences, organic, emotional, intellectual, individual, social, tend to follow its use? Which are constant and which confined to particular times and places? What other factors combine to produce them? Which are expected by the persons who use the standards, and which are unexpected? What would follow if the standard were more consistently carried out? To what extent do these results (actual and possible) agree with, conflict with or redirect the more constant impulses, desires and capacities of human nature?

In what ways may the standard and its consequences be modified?

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BOOK REVIEWS

Manhood of Humanity; The Science and Art of Human Engineering. ALFRED KORZYBSKI. New York: E. P. Dutton & Company. 1921. Pp. xiii + 264.

In the preface the author announces that (p. ix) "This book is primarily a study of Man and ultimately embraces all the great qualities and problems of Man."

Count Alfred Korzybski temperamentally seems to be a philosopher and poet who was trained to be a mathematician, engineer and soldier. His natural inclinations have led him to be intensely interested in humanity. In trying to explain human behavior he has used mathematical and engineering terms and figures of speech.

The sub-title of this volume "The Science and Art of Human Engineering" means the directing of the energies and capacities of human beings to the advancement of human weal.

Man has brought much suffering upon himself because he has been ignorant concerning himself, so in order to get a better understanding of humanity the author has proposed a mathematical investigation of the problem. He claims that mathematics must become the basis of the social sciences because of its characteristic precision, sharpness and completeness of definitions. The natural sciences have gone on much faster than the "so-called social sciences" because they have used mathematical methods. Humanity is said to be in its infancy because of so much purposeless sacrifice and wasted energy.

A very novel explanation of the relation of mankind to other organic life is offered. Plants as living organisms appropriate the basic energies of the sun, soil and air. They constitute the lowest order of life. This life order or capacity is represented by the

first dimension or by dimension I. This peculiar quality is called "basic-energy-binding" or "chemistry-binding."

Animals possess the autonomous power to move about in space. This power places them in a higher order. They have "chemistry-binding" power but their peculiar power lies in conquering space. Animals have, therefore, a two-dimensional life or are living in life dimension II characterized as "space-binding."

Man, like the animals, has chemistry- and space-"binding" power, but in addition to this he has the power to profit by experience—the experience of past generations. Every succeeding generation builds upon the accumulated knowledge of the past, while the animal begins its life history at the same point as preceding generations. This quality or power Korzybski has called "time-building." In life it represents dimension III. Such then is the proposed conception of man—one whose glory consists in his peculiar capacity for binding time. The power to "bind time" is a perfectly natural power and the power to act in a time-binding capacity becomes the measure of human progress. Time-binding is the energy that civilizes, it produces wealth, it is the great creative power. Humans have the power to continue where the past generation stopped, profiting by all previous generations. The beaver builds his dams the same without gaining anything from past generations. The progress of man then should become faster from generation to generation. The natural law of this increment can be shown to follow the law of logarithmic increase (pp. 90-92). Thus, if P is the progress made in a given generation, and if R is the ratio, then the progress made in the second generation is PR , and that of the third is PR^2 and that made in a single T th generation will be PR^{T-1} . The expression PR^{T-1} is called an exponential function of time. The immortal offspring of the "marriage of Time and human Toil" increase in a marvelous manner, especially when we consider the vast number of generations that have already contributed or should have contributed to our welfare.

Here we see the need of a technologized social science. Human progress will go on at a rate measured by a rapidly increasing geometric progression if we acquire sense enough to let it do so.

Wealth, according to this teacher, consists of the fruit of man's time-binding capacity—"the living work of the dead."

The closing chapters of the book emphasize the importance of the time-binding activities with a view toward the happiness of all humanity. He finally proposes a Department of Coördination or Coöperation which is to be the nucleus of a civilization developed along mathematical-engineering lines. This development would bring about the greatest true liberty and happiness.

Three appendices are included in the volume with the following titles: (1) Mathematics and Time-Binding, (2) Biology and Time-Binding, (3) Engineering and Time-Binding.

It is evident that the whole discussion rests on the so-called "time-binding" capacity or power of the human being. Evidently what is meant by time-binding is the capacity to profit by experience as the result of associative memory or what has come to be known as intelligence. Although the author probably would not approve of this statement, yet it is evident that mathematical figures of speech have been employed to describe facts that have been considered in every important study of human behavior.

Before the ratio of progress can be worked out, or before a formula for normal human development can be written, it will be necessary to have standards of measurement to see if the relations are as they have been assumed. Psychology (classified on page 25 with philosophy, law and ethics as "private theories" or "verbalisms") as the science of human behavior has already done much in measuring intelligence with its intelligence-quotient and other psychometric methods. The study of human behavior by those who have been especially trained has shown that an *a priori* assumption of mathematical formulæ is a false procedure.

A few, but their tribe decreaseth, of the social investigators still look upon man as supernatural, but most of those in good standing study humanity from an empirical point of view and organize their data quantitatively wherever standards of measurement are available.

The enthusiasm of the author has led him to suggest that mathematics *per se* can solve the problem of humanity. What is needed is the help or service of mathematics in solving problems that are already clearly defined in the minds of real social scientists.

The *Manhood of Humanity* contributes very little to the social sciences, except some interesting mathematical and engineering analogies. The plea for exact and scientific methods in the study of humanity and the warning against mystical or prejudicial attitudes is to be commended.

Humanity is still before us, with us and in us, with its responses to complex and remote stimuli, and with its complicated, delayed responses. Humanity still challenges first the biologist, then the psychologist, and finally the sociologist for an explanation. The Science of Humanity will be the synthesis of all sciences and not the outgrowth of mathematics merely.

J. V. BREITWIESER.

Die Deutsch Philosophie der Gegenwart in Selbstdarstellungen,
 RAYMUND SCHMIDT, editor. Leipzig: Felix Meiner, 1921. Vol-
 umes 1 and 2, Pp. 228; 203.

Conceive of a history of European philosophy in which each of the authors had presented his own views in final and well considered form. It would be a fascinating book to read. Less enviable, perhaps, would be the task of the editor. If he had a conscientious desire to make his volume uniform in any sense, he might find difficulty. Not only would there be a tendency on the part of his contributors to expatiate unduly, but a sort of waywardness might be expected. One would not be surprised to find Plato setting down his thought in a myth. Augustine might wish to publish an exhortation and Thomas a Kempis a pious prayer. I am inclined to think there would be slighter difficulty with the German contributors; for after all, to be a philosopher in Germany is to have a profession and to recognize professional rules and etiquette.

So we might expect to find in this history of contemporary German philosophy, to which each of the writers has contributed his own statement of his views and of their psychogenesis, a certain "cut and driedness." Such an expectation is, however, by no means justified by the contents of the volume. There is, to be sure, a noticeable dominance of the idol of the system over certain of the contributors. One "decided to become a philosopher." Another, when he was called to an academic position, discovered that he was supposed by the traditions of the post to lecture on certain subjects and forthwith began to do so. And frequently one is aware that the progress of a man's thought is too greatly determined by a sense of obligation to fill the picture previously outlined, or to expand his theories so as to cover every portion of the philosophic field.

It is altogether probable that these faults, if faults they be, are due to the fact that the representatives of philosophy whose views are here given are principally in the university world and of the philosophical department. One is glad to note that the editor, Dr. Raymund Schmidt, promises that future volumes will also contain a presentation of authors whose contributions lie in the field of the philosophy of law, of education and other departments. Yet even in this present group there are men who have done important work outside the strict limits of their departmental duties.

Moreover, one is struck by the free and courageous criticism which a man of the stamp of Karl Joël directs at the traditions of university teaching, when he designates lectures as "the passive subjection of a crowd of students to a specialized mass of material which they do not digest." The editor is justified in his promise that

the collection will consist of striking contrasts. The men whose contributions constitute the first volume are Paul Barth, Erich Becher, Hans Driesch, Karl Joël, A. Meinong, Paul Natorp, Johannes Rehmke and Johannes Volkelt; those appearing in the second being Erich Adickes, Clemens Baeumker, Jonas Cohn, Hans Cornelius, Karl Groos, Alois Höfler, Ernst Troeltsch, and Hans Vaihinger. There is no need to make invidious comparisons; they are a distinguished group. The absence of such names as Rudolph Eucken, Aloys Riehl, and Ernst Mach may cause surprise, particularly since no reason is given for their omission.

In so far as any general trend is noticeable throughout the work, I think it would be fair to interpret it as a return to the older tradition of German idealism. Fortunately, there can be no suspicion that this is due to the editor's selection, for Dr. Schmidt has indeed adhered scrupulously to his above-mentioned intention of making the collection a genuine symposium. If I am justified in claiming to discover the renaissance of idealism, it is surely advisable to spell it with a small "i." Yet the emphasis is unmistakable, and is manifest in the motive which, for instance, has led Vaihinger, and his collaborators, Groos and Cornelius, to reinterpret the *Philosophie des als Ob* as a positivistic idealism in which the *Als-Ob* world becomes the world of values more especially of a religious order. This interest, so clearly reminiscent of ante-Hegelian thought, seems to account in large part for the admirably modest recognition of the essentially personal aspects of problems of evaluation. Undoubtedly it also accounts for the importance given to the biographic and psychogenetic conception of philosophy, as voiced by Fichte: *Was für eine Philosophie man wähle, hängt davon ab, was für ein Mensch man sei*. It is significant that this sentence is quoted several times in these volumes.

That each of the contributors is aware of a certain embarrassment in speaking of himself is evident. "*De nobis ipsis silemus*," Paul Natorp begins—and others echo the sentiment. They are over-anxious, in numerous instances, to avoid self-advertisement. "Americanism" (*sic*), is discounted. The writers recognize that they can not hope properly to estimate their own contributions to philosophic literature. Meinong, whose contribution is unfortunately a final summary of his views, writes thus of the difficulty of the undertaking—"When one's work is drawing to an end, the question may naturally confront one as to what one has accomplished in this brief day of life. But if he as genuinely desires to answer the question, the feeling will arise that he can only conscientiously give account of that which he has sought to do, not of that which he has achieved."

Each article is preceded by a photograph of the author, excellent in craftsmanship and in several instances striking portraits. The book is attractively made, though the economy of cloth is evident. One wonders who in Germany can afford to pay sixty marks for a volume, though at the present rate of exchange, it is considerably less expensive than a similar book would be in this country.

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COLUMBIA UNIVERSITY.

JOURNALS AND NEW BOOKS

REVUE PHILOSOPHIQUE. Sept.-Oct., 1921. *De quelques espèces d'égalités et de quelques-uns de leurs avantages ou inconvénients* (pp. 146-172): ADRIEN NAVILLE.—A duality of conceptions of equality must be distinguished: equality of contribution in exchange, and equality of individual returns. Equality is always a psychical fact, and sociologically and morally it is not the case that where there is equality of contribution in exchange there is, or can be, equality of return. Justice is equality; but there are many varieties of equality, and these are not always reconcilable. *La perception de la synthèse psychique* (Suite: pp. 173-191): F. PAULHAN.—We "encounter everywhere in conscious life the perception of synthesis. It constitutes the essential element in the control of the mind and in the control of its elements. . . . The perception of a harmony . . . or a discordance is continually in us, and this is the knowledge . . . and appreciation by the mind and its elements of these elements themselves and the elements of these elements." *Éléments objectifs du monde matériel* (Suite: pp. 192-232): P. DUPONT.—The point of departure for science after stripping away every human element consists of relations of difference, similarity and dissimilarity, and the like. The intellectual character of these relations is no ground for denying objectivity. No photograph of the objective of science can be given, and if it be called just *X*, it can be shown that this *X* "is a collection of a multitude of *x*'s discriminable by us," and the relations between them can be firmly established. The objective of science can not then be equated with nothingness. *La notion des centres coordinateurs cérébraux et le mécanisme du langage* (suite: pp. 233-280): H. PIÉRON.—"The progress of our localizations is incontestable; from the moment that we no longer seek to localize the entities, imaginary faculties, and judgments of value . . . and all the *idola* of traditional psychology and expect to find . . . only the histo-morphological correspondents of psycho-physiological processes

analyzed in an objective spirit, we encounter, despite evident difficulties, no insurmountable obstacle in progress towards a functional chart of the brain." *Revue Critique. Philosophies de L'Orient*: P. MASSON-OURSSEL. *Analyses et Comptes rendus*. P. E. B. Jourdain, *The Philosophy of Mr. B*tr*nd R*ss*ll*: A. LALANDE. J. Segond, *Intuition et Amitié*: E. LÉROUX. Ossip-Lourié, *La Graphomanie*: DR. JEAN PHILIPPE. Hector Denis, *Discours philosophiques*: C. BOUGLÉ. A. Gemelli, *Religione e scienza*; F. Olgiati, *Carlo Marx*; A. Gemelli, *Le dottrine moderne della delinquenza*: E. GILSON. Dr. Ed. Claparède, *L'école sur mesure*: E. CRAMAUSSEL. Paul Lapié, *Pédagogie française*: E. CRAMAUSSEL. *Nécrologie: François Picavet (1851-1921)*.

Prescott, Frederick Clarke. *The Poetic Mind*. New York: The Macmillan Co., 1922. Pp. xx + 308. \$2.00.

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NOTES AND NEWS

AN OPEN LETTER TO THE ANTI-BEHAVIORISTS

Dear Fellow Workers:

I have followed your papers during the last ten years with keen interest and much profit and now at the end of the decade I feel impelled to put a question to you. At first blush the interrogation may seem personal and yet I assure you that it is motivated only by the most dispassionate search for truth on this question which is causing you so much unrest. It may well be that a little self-analysis, a little effective introspection directed at a certain aspect of the social situation now constituted by the "Behavioristic Controversy" may throw just that light upon the problem which will enable some of us to cast our lot definitely with one party or the other.

I want to ask you this: Who are the behaviorists? Have you ever brought together a bibliography of this topic for the past decade? If you have not, the undertaking will be most enlightening. I can find but two men who have presented and defended behaviorism, Drs. John B. Watson and A. P. Weiss. Their labors are summed up in two books and some dozen papers. I can not admit, as you may see, that there is any other behaviorism than that advocated by Dr. Watson. Behaviorism has come to mean just one thing and that is a psychology which takes as its subject matter, not consciousness, but stimulus and response relationships. Some of you, I

know, have advocated new systems of behaviorism, but you do not succeed. No one in writing of this point of view is attacking *your* system, and the more papers you write the more firmly do you fix the true historical significance of the term. Your "truly psychological behaviorism," your "new formula," your "conscious behavior" and the other substitutes which you hasten to bring forth, only serve to direct attention to the illegitimate nature of your offspring. But if we find only two behaviorists in the literature, how many and what anti-behaviorists can be found? For fear of offending some of you by omission, I shall not urge the following list as complete. It is, however, fairly so and certainly is quite representative. May I, then, present the following *antis*: James R. Angell, E. B. Titchener, R. M. Yerkes, B. Bode, M. W. Calkins, Wm. McDougall, A. A. Robach, D. S. Miller, H. R. Marshall, H. R. Crosland, E. C. Tolman, A. O. Lovejoy, J. R. Kantor, Mrs. DeLaguna, M. F. Washburn, E. B. Holt, George Mead, Bertrand Russell, T. H. Pear, F. C. Bartlett, E. M. Smith, G. H. Thompson, A. Robinson, and others. I do not include either the writers of text-books or scientists other than psychologists; but a complete roster of printed opponents would range from zoölogists to philosophers and from humble members to presidents of the American Psychological Association. Almost each new periodical number affords a "coming-out party" for a new member of your group. And there is no apparent increase among your opponents.

My dear friends, why do you write so much? I raise the issue in all seriousness. If here, there, and yonder, psychologists were joining Watson's banner, you might be actuated by the menace of opposing numbers. But if behaviorism is spreading, the literature fails to reveal it, although the cloak rooms and corridors may bear more eloquent witness. I will not be so vulgar as even to suggest that your articles are merely for the sake of intellectual exercise and the display of critical skill. No, it is the power and incisiveness of the theory which you fear, a theory which without increasing defenders causes you to see an enemy in every one not an anointed introspectionist and to detect a danger in all objective study. This social phenomenon affords the strongest argument inclining me to believe that Watson has found the Achilles heel of your "old" psychology.

Ladies and gentlemen, you do protest too much.

Affectionately yours,

W. S. HUNTER.

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THE JOURNAL OF PHILOSOPHY

REALISM WITHOUT MONISM OR DUALISM—I

KNOWLEDGE INVOLVING THE PAST

IN his contribution to the volume of *Essays in Critical Realism* Professor Lovejoy maintains that pragmatism can make good a profession of realism only by aligning itself with a dualistic epistemology such as is presented by his collaborators and himself. He supports this contention largely by an examination of passages drawn from my writings. The least I can do is either to express my assent or state the grounds for withholding it. Certain of his points, and those perhaps of the more fundamental character, though occupying less space, concern the conception of experience. This phase of the matter is reserved for independent treatment. Other points seem, however, to adapt themselves to separate discussion, and to them I address myself. The first has to do with knowledge of the past, or, as from my standpoint I should prefer to say, knowledge about past events or involving them.

This kind of knowledge is taken by Mr. Lovejoy, as by many others, to constitute a stronghold for a representative or dualistic theory of knowledge. Even the monistic epistemologists appear to accept some kind of transcendent pointing to and lighting upon some isolated thing of the past, carrying, apparently, its own place in the past or date in its bosom, though they deny the existence of an intermediate psychical state and fall back on a knower in general or a brain process to make the specific transcendent reference. To me, this latter difference seems a minor matter compared with the question of a leap into a past which is treated as out of connection with the present. Consequently, I have tried to show that knowledge where the past is implicated is logically knowledge of past-as-connected-with-present-or-future, or stating the matter in its order, of the present and the future as implicating a certain past. After several pages which seem to me largely irrelevant to my own conception, Mr. Lovejoy states what my conception actually is and says of it (p. 68) that it is "the most effective and plausible part of the pragmatist's dialectical reasoning against the possibility of strictly 'retrospective' knowledge." It certainly should be; it expresses the gist of my discussion.

The point concerns the relation of verification to thought and hence to knowledge. Verification of thought about the past must be present or future; unless, then, thought about the past has a future reference in its meaning, how can it be verified? With reference to this question, Mr. Lovejoy is good enough to state that my "paradox" involves an attempt to escape from a real difficulty or at least what appears as a difficulty. Before coming to Mr. Lovejoy's specific objections, let me develop this point. Quite apart from pragmatism, an empiricist who is empirical in the sense of trying to follow the method of science in dealing with natural existences, will feel logically bound to call nothing knowledge which does not admit of verification. To him, then, judgments about the past will present themselves as hypothetical until verified—which can take place only in some object of present or future experience. In contemplating the possibility of applying this conception to ordinary "memory-judgments," he will be struck by what is going on in the natural sciences. He will see that many zoölogists have ceased to be satisfied with theories about past evolution which rest simply upon a plausible harmonizing of past events, that they are now engaged in experimentation to get present results, that the tendency is to find present, and hence observable, processes which determine certain consequences. He finds geologists attempting verification by experiment as well as by search for additional facts. Turning to another field of judgments about the past he finds that "literary" historians are influenced by the striking or picturesque or moral phases of the events they deal with, and by their lending themselves to composition into a harmonious picture, while "scientific" historians are not only more scrupulous about the facts, but search for new, as yet hidden, facts, to bear out their inferential reconstructions. There is nothing inherently paradoxical in saying that such emphatic scientific cases should give us our clew to understanding the logic of everyday cases which are not scientifically regulated.

I see a letter box; there is an observed thing. It is a commonplace that every recollection starts, directly or indirectly, with something perceived, immediately present. It suggests a letter. This may remain a mere suggestion. The thought of a letter written yesterday or last year may become simply something for fancy to sport with—an esthetic affair, what I call a reminiscence. Truth or falsity does not enter into the case. But it may give rise to questions. Did I actually write the letter or only mean to? If I wrote it, did I mail it or leave it on my desk or in my pocket? Then I do something. I search my pockets. I look on my desk. I may

even write the person in question and inquire if he received a letter written on a certain date. By such means a tentative inference gets a categorical status. A logical right accrues, if the experiments are successful, to assert the letter was or was not written. Generalize the case and you get the logical theory concerning knowledge about the past which so troubles Mr. Lovejoy.¹

So far, however, the gravamen of Mr. Lovejoy's objection is not touched. He replies that the *meaning* of the judgment concerns the past as such, so that verification even if future is of a meaning about the past. Only the *locus* of verification is future: means of proof, but not the thing proved. Consequently, my argument confuses what the original judgment meant and knew itself to mean with an extraneous matter, the time of its verification (see p. 69 of *E. C. R.*). It may be doubted whether dialectically the case is as clear as Mr. Lovejoy's distinction makes it out to be. In what conceivable way can a future event be even the means of validating a judgment about the past, if the meaning of the future event and the meaning of the past event are as dissevered as Mr. Lovejoy's argument requires? Take the case of questions about the past which are intrinsically unanswerable, at least by any means now at our command. What did Brutus eat for his morning meal the day he assassinated Cæsar? There are those who call a statement on such a matter a judgment or proposition in a logical sense. It seems to me that at most it is but an esthetic fancy such as may figure in the pages of a historic novelist who wishes to add realistic detail to his romance. Whence comes the intellectual estoppel? From the fact, I take it, that the things eaten for breakfast have left no consequences which are *now* observable. Continuity has been interrupted. Only when the past event which is judged is *a going concern having effects still directly observable are judgment and knowledge possible*.

The point of this conclusion is that it invalidates the sharp and fixed line which Mr. Lovejoy has drawn between the meaning of the past and the so-called means of verification. So far as the meaning is wholly of and in the past, it can not be recovered for knowledge. This negative consideration suggests that the true object of a judgment *about* a past event may be a past-event-having-a-connection-continuing-into-the-present-and-future. This brings us back, of course, to my original contention. What can be said by way of fact to support its hypothetical possibility?

¹ Mr. Lovejoy remarks in passing that "we have even developed a technique by means of which we believe ourselves able to distinguish certain of these representations of the past as false and others as true" (pp. 67-68 of *E. C. R.*). I do not see how an account of this technique could fail to confirm the position taken above; I am willing to risk it.

Let us begin with what is called reminiscence. The tendency to tell stories of what has happened to one in the past, to revive interesting situations in which one has figured, is a well-known fact. So far as the stories are told to illustrate some present situation, to supply material to deal with some present perplexity, to get instruction or give advice, they exemplify what is said about prospective meaning. But there are only a few persons who confine themselves to what is intellectually pertinent, who cut down reminiscence to its bare logical bones. Esthetic interests modify the tale, and personal, more or less egoistic, interests fill it up and round it out. The development of reminiscence in old age is doubtless in part compensatory for withdrawal from the actual scene and its imminent problems, its urgencies for action.

Taking, however, whatever intellectual core there may be, such as the material that is employed to give advice to another as to how to deal with a confused and unclear situation, there appears a clear distinction between subject-matter employed and object meant. The past occurrence is *not* the meaning of the propositions. It is rather so much stuff upon the basis of which to predicate something regarding the better course of action to follow, the latter being the object meant. It makes little difference whether the past episode drawn upon is reported with literal correctness or not. Imagination usually plays with it and in the direction of rendering it more pertinent to the case in hand. This does not necessarily affect the value of the judgment—the advice given—as to the course of action which it is better to pursue, or the *object* of judgment. The facts cited, the illustrative material adverted to in support of the conception that a certain course is better, are subject-matter, but not the meaning or object.

Such a case does not directly and obviously cover judgments *about* the past. If the one giving advice began to reflect upon the pertinency of his own past experience to the new issue, we may imagine him going back over the past episode to judge how correctly he has reported it. Just what was it that happened, anyway? This sort of case is crucial for my theory. It exemplifies the situation in which Mr. Lovejoy claims that the meaning to be verified is exclusively concerned with the past even though the locus of means of verification be future. It is worthy of note that, by illustration, this examination of the correctness of the present notion about the past arises out of a problem about the present and future. It is conceivable that specific reference to the past is, after all, only part of the procedure of making judgment about the present as adequate as possible.

This point is not stressed, however, for it is, at this stage of discussion, an easy retort that such an inference follows only because the illustration has already been loaded and aimed in that direction. As a suggestion, however, it may be borne in mind. What does positively emerge from the prior discussion is a distinction between *subject-matter* and *object* of judgment and knowledge. How far is the distinction a general one? It is not one introduced *ad hoc* for the discussion of judgments about the past. It characterizes by logical necessity any *inquiry*. For if the object were present, there would be no inquiry, no thought or inference, no judgment in any intellectual sense of that word. On the other hand, there must be subject-matter, there must be accepted considerations, or else there is no basis for constructing or discovering the object. A verdict represents the judgment in a court of law; it contains the object, the thing meant. Evidence presented and rules of law applied furnish subject-matter. These are diverse and complicated and only gradually is the object framed from them. A scientific inquiry about Einstein's theory, the nature of temperature, or the cause of earthquakes presents the same contrast of an ultimate object, still unattained and questionable, and subject-matter which is progressively presented and sifted till it coheres into an object, when judgment terminates.²

If we apply this generic and indispensable distinction to analysis of judgments about the past, it seems to me that the following conclusion naturally issues: The nature of the past event is subject-matter required in order to make a reasonable judgment about the present or future. The latter thus constitutes the object or genuine meaning of the judgment. Take the illustration of the letter. Its *object* must be described in some such terms as the following. What is the state of affairs as between some other person and myself? Is his letter acknowledged or no; is the deal closed, the engagement made, the assurance given or no? The only subject-matter which will permit an answer to the question is some past episode. Hence the necessity of coming to close quarters with that past event. In the subject-matter there are always at least two alternatives, while the object is singular and unmistakable. Either I wrote the letter or I did not. Which thought or hypothesis is correct? There can be no inquiry without just such incompatible alternatives present to mind. I have to clear up the question of what is the *object* of judgment by settling its appropriate subject-matter: what *has* happened. The *object* of the judgment in short is the fulfillment of an intention.

² Subject-matter is not to be confused with data. It is wider than data. It includes all considerations which are adduced as relevant, whether by way of factual data or accepted meanings, while data signifies such facts as are definitely selected for employment as evidential.

I intended or meant to enter into certain relations with a correspondent. Have I done so or is the matter still hanging fire? Certainly, whether or not my analysis is correct, there does not appear to be anything forced or paradoxical about the view that in all such cases the actual thing meant, the object of judgment, is prospective.³

To protect the conclusion from appearing to depend upon the quality of the particular illustration used, namely one involving a personal past and personal course of action, we need an impersonal instance of a past episode. That provided by Mr. Lovejoy may be employed. "When I point to this morning's puddles as proof that it rained last night, the puddles are the means of proof but not the thing proved. For verification-purposes their sole interest to me is not in themselves, but in what they permit me to infer about last night's weather. If someone shows me that they were made by the watering-cart, they become irrelevant to the subject-matter of my inquiry—though the same proposition about the future, 'there will be puddles in the street,' is still fulfilled by them" (p. 69 of *E. C. R.*). One wishes that Mr. Lovejoy had subjected his statement to the same critical scrutiny to which he has exposed mine. When it is examined, certain interesting results present themselves.

In the first place, my conception is not contained or expressed by any such judgment as that "there are or will be puddles in the street." The implication of my hypothesis is that the object of judgment is that "prior rain has present and future consequences," such as puddles, or floods, or refreshment of crops, or filling of cisterns, *etc.* In denying that the past event is as such the object of knowledge, it is not asserted that a particular present or future object is its sole and exhaustive object, but that the content of past time has "a future reference and function."⁴ That is, the object is some past event in its connection with present and future effects and consequences. The past by itself and the present by itself are both arbitrary selections which mutilate the complete object of judgment. What appears in the above case of the letter as a fulfilment of intention, appears here as a temporal sequence of condition and consequence. In each case, the past incident is part of the subject-matter of inquiry which enters into its *object* only when referred to a present or future event or fact.

In the second place, analysis reveals that the proposition "there

³ The argument does not depend upon any ambiguity between objective and object. As long as inquiry is going on the object is an objective because it is still in question. The final object represents some objective taking settled and definitive form.

⁴ As Mr. Lovejoy quotes from me (p. 67 of *E. C. R.*). I do not wish to claim, however, that I have previously made this point as clearly as I am now making it.

will be puddles in the street" is *not* the same in case the passage of the watering-cart is the past event which properly enters into the subject-matter of inquiry. It is by further investigation of present and future facts that it is determined whether a watering-cart or a shower is the actual past event. Not all streets will have puddles if the watering-cart was the cause, or at least roofs won't be wet, cisterns won't be replenished, farmers' soil moistened. If we consult the value of accurate weather reports to a mariner or a member of the Chicago Board of Trade, we get light upon the real object of a judgment involving past weather conditions. The point is the connection of past-present-future, a temporal continuum. Precisely to avoid such incomplete inferences as are manifested in the conclusion "there will be puddles in the street" on the basis of considerations like those adduced in Mr. Lovejoy's illustration, we make the exact nature of the past event the theme of exact and scrupulous inquiry.⁵ The importance of the present as basis of inference about the past is seen in the growing importance in science of contemporary records, registrations, devices for carrying over the past event into things which can be inspected in the present, devices for measuring and registering the lapse of time, *etc.* This makes the difference between scientific thought and loose popular thought. The reference to or connection with the present and future comes in at the completing end. The present not only supplies the only data for a correct inference about the past, but since the potentialities or meanings of the present depend upon the conditions of the past with which they are correlated, future events are also implied as part of the meaning. If a watering-cart, or a local shower, then no effect upon crops, no effect upon the prices of grain; or, on a lesser scale, no needed precautions as to wearing rubbers.

The logical bearing of the earlier reference (p. 311) to the impossibility of judgments about the past without continuing and present consequences ought now to be clearer. My analysis may be correct or incorrect: that is a question of fact. But the account given does not involve an arbitrary paradox undertaken in behalf of some pet theory. The real point at issue is whether, as long as we are dealing with isolated, self-sufficient events or affairs, anything which is properly called knowledge and object of knowledge can exist. The real point of Mr. Lovejoy's argument is that isolated, self-complete things are truly objects of knowledge. My theory denies the validity of this conception. It asserts that mere presence in experience is quite a different matter from knowledge or judgment, which always involves a *connection*, and, where time enters in, a connection of

⁵ That is, we examine present things more carefully and extensively.

past with past and future. The reader may not accept this theory, in spite of its congruity with all the best authenticated cases of knowledge of matter of fact, namely, the objects of science. But when the secondary matter of inconsistency or arbitrary paradox is concerned, it is essential to grasp this point. The case of judgment involving past events is but one case of the general (logical) theory as to knowledge. And as I have pointed out before, it makes it possible to drop out the epistemological theory of mysterious "transcendence," and deal with problems on the basis of objective temporal connections of events, where we never are obliged, even in judgments about the remotest geological past, to get outside events capable of future and present consideration. Once recognize that thoughts about the past hang upon present observable events and are verified by future predicted or anticipated events which are capable of entering into direct presentation, and the machinery of transcendence and of epistemological dualism (or monism) is in so far eliminated.

What is the alternative to my conception? Mr. Lovejoy makes it clear what the alternative is. After all, we have not got very far when we have postulated a psychical somewhat that somehow transcends itself and leaps back into the past. How do we know that it is not leaping into the air or into some quite wrong past? In speaking of this point, and denying the possibility of fulfilling meanings about the past, or of their verification proper, he mentions "*an irresistible propensity to believe that some of them are in fact valid meanings*" (p. 70, italics mine). An irresistible propensity which applies to "some" meanings and not to others is, to say the least, a curious fact. It suggests that perhaps the propensity is most unreliable when it is most irresistible. He speaks also of indirect verification based on "instinctive assumptions" (p. 71). He says that a truly pragmatic analysis "would include an enumeration of the not-immediately-given-things which it is *needful for the effective agent, at that moment, to believe or assume . . .* if the process of reflection is to be of any service to him in the framing of an effective plan of action" (p. 70). He charges me as a pragmatist of failing to live up to pragmatism and "trying to transcend one of the most inescapable limitations of human thought" (p. 70).

There are pragmatists who fall back on instinctive assumptions and propensities, as a ground for accepting and asserting meanings to be valid. They will welcome Mr. Lovejoy to the fold. But the author of "Thirteen Varieties of Pragmatism" should be cognizant that there is a variety not of the "will to believe" type. If his conception is such a fixed part of the definition of pragmatism that refusing to admit it is inconsistent with pragmatism, then, as I have

said before, I have no claim to be called a pragmatist. I am even hopeful that his clear statement of instinctive propensity *versus* logical verification as the alternatives will help convert some non-pragmatists to my account of knowledge involving past events.

Enumeration of the things needful to assume in framing an effective plan of action is an undoubted part of the process. But it is a hypothetical enumeration. Part of the operation of intelligent formation of a plan of action is to note what the needs of the situation are. But the needs of an agent can themselves be judiciously estimated only in connection with other matters which enter into the situation along with the agent. To isolate the needs or propensities of the agent and regard them as grounds of belief in the validity of meaning seems to be the essence of subjectivism. And when the plan of action is framed it is still tentative. It is verified or condemned by its consequences. A propensity without doubt suggests a certain view and plan: when employed in connection with environmental factors it makes a view or plan worthy of acceptance *for trial*, acceptance as a working hypothesis. Beyond this point, the notion that a propensity, however practically irresistible, or an assumption, however instinctive—if there be such things apart from habit—warrants belief that a meaning is valid commits us to a subjectivism which is, to my mind, the most seriously objectionable thing in idealism.

It is Mr. Lovejoy, it seems to me, who is committed to a subjective pragmatism.

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THE DIFFERENTIATING PRINCIPLE OF RELIGION

THE most common conception of religion that has formed the basis of theological definition is that which generalizes man's total outlook upon the world as a whole. This view, which assumes that the sphere of religion and the world are commensurable, is chargeable to a deeply rooted fear that some vital element, essential to the fulness of spiritual experience, may be omitted if religion is defined exclusively in any specific phase of devotional activity. The complexity of the religious consciousness appears to prohibit any exemption in the spiritual sphere; which is to say, religion insists upon being as inclusive as life itself. Consequently, suspicion or unpopularity is usually associated with attempts at simplification, such as basing religion fundamentally in emotion, or belief, or will or any single element for which priority is claimed. The widest and most

inclusive view of the world in its totality and completeness is the conception which has met with the greatest favor in the minds of those to whom we owe our standardized definitions.

But this determination to maintain a religious monopoly upon the universe has strained to the breaking point our intellectual conscientiousness; for an average amount of reflection will make it clear that those who have sought to define the nature of religion specifically in terms of fear, or wonder, or reverence, or love, or any other simple element, though they have failed in exactness, have been at any rate upon the right track, since religion and life can not be said to coalesce at all points and the object of definition is differentiation. That which is richest in universality is proportionately poorer in elucidation.

In order to survey the extent of the religious field and estimate how wide a realm lies under spiritual control, we should begin by determining the fixed center of spiritual gravity, so to speak, for the circumference is an ever-shifting circle. It is impossible to measure the boundaries of the religious realm once for all, but it is possible and necessary to determine the principle that obtains in all true religion. The world of human experience is an ever-widening one and it is a natural error to conceive the province of religion as constantly enlarging to keep pace with this expansion, but in reality the reverse is true. Modern thought is fully alive to the need of a practical evaluation of spiritual reals, an evaluation which is bound to reduce the scope of religious activities to decidedly narrow, and more and more exclusive boundaries. In other words, the world is becoming less quantitatively spiritual than ever before, and this fact suggests the need of establishing more precisely than has yet been done with any degree of confidence the nature of the differentiating principle which marks off the specific realm of genuine religion from other parts of existence.

Let me recall some ways in which religion has been narrowed down. The Platonic inheritance of the Good, the True and the Beautiful, appropriated by Christianity as permanent apartments of the religious sphere, is being annulled and, in fact, is already practically spent. The fields of art, truth (philosophic)—not to mention science—have long overpast the boundaries of religious control. In the beginning, science was subdued somehow, though awkwardly, art was more gracefully submissive, and truth (*i.e.*, Truth *semel pro semper*) became more or less the faithful handmaid of theology; and this religious inclusiveness went along with the general cosmic idea of Deity whose omnipotent sway knew no bounds or limitations. This traditional all-embracing view, however, has

been conspicuously modified in recent years. Science pursues a free course, art is independent of religious control, truth already has gained a large degree of functional liberty, and morals, always restless and impatient of spiritual restraint, would seem to be striving to throw off the religious yoke and attain the freedom which science enjoys.

Without debating the relative merits of the good, the true, the beautiful and the dynamic to achieve independence in their respective fields, it is obvious that religion must forego her claim of absolute inclusiveness and recognize legitimate limitations. And if the signs of the times are truly discerned, one may conclude that religion, herself, is not loth to surrender the idea of cosmic universality in exchange for one that is more intensive and less abstract.

Such a radical tendency or change in spiritual activities has been brought about in the following way. Before the study of comparative religion had become an accepted part of Christian apologetic—in relatively recent times—it was the custom to classify world religions according to a general standard as true or false, Christianity in some form or other being set off against all other systems of faith as *the* truth, the rival beliefs being gauged as false, or at any rate merely more or less true—certainly less. To-day, however, this formal system of classification has been discarded, and we are inclined, quite universally, to formulate a system of classification upon a scale of the better and the worse or according to a principle of practical value. Instead of rating the so-called world religions outside Christianity as though they were not religions at all, in the strict sense of the word, since they are not wholly true, we are willing to admit that non-Christian beliefs and practises are expressive of religion, *quâ* religion, only not so good, not so high and pure, not so valuable, functionally, as the dominant faith of the world to-day.

This change of mind testifies to an important modification of our idea of the nature of religion, the essence of which is thought to inhere in that which constitutes value for moral and spiritual life. Religious practise is no longer judged with reference to the truth of a belief simply, but is determined by a criterion of value or worth; and belief, itself, is expressed more and more in terms of a practical nature. All the world cults, therefore, are recognized for what they are worth; and all successful missionary efforts are based upon this recognition. Consequently we speak of one form of religion as better than another or a particular element as less good than another; the criterion of truth is relegated to second place and the principle of value or goodness prevails. The result is that religion becomes exclusive inasmuch as she limits herself to that which is the highest

and best, and in the interest of the greater values she eliminates the lesser and irrelevant. What a departure, then, from the position of thinkers in the time of Mill who wrote, "If religion, or any particular form of it is true, its usefulness follows without any other proof."¹

To realize that the best religion must inevitably become increasingly finite, *i.e.*, restricted in scope and limited in function, may appear at first to be radically opposed to the commonly cherished ideal of religion's primacy and the catholicity of spiritual aims. But is this the case? I venture to suggest that the reverse is true. Can not religion, as a palpable ideal and an actual driving force, succeed better in the dissemination and conservation of the good by an intensification of power through the limitation of her range?

The problem, therefore, that arises is this: If religion in the only form now acceptable to us is only a part of life and no longer the constitutive principle of the whole, what part does she concentrate upon and in? Such a question is the direct consequent of our departure from a crumbling traditional position which accepted or rejected spiritual contributions according to a principle of standardized truth. In other words, inasmuch as we now employ various practical gauges of value to test the relevancy of religious ideals to moral and spiritual ends, we are bound to consider religion from the exclusive point of view, and ask: What elements have lost their original spiritual value? or, What factors should be discarded as never having had sufficient genuine spiritual worth to justify their survival? That is to say, we are narrowing down the circle of the religious sphere, and leaving more and more of life to the non-religious field. The question remains then: What survivals are essential for spiritual progress?

Before I attempt to state my thesis in answer to this problem, let me emphasize again the necessity of the factor of religious elimination. The primary tendency or instinct of organisms to develop from the simple to the complex, from the general to the particular, from the single to the plural is coördinate with a law of progress which organizes by a process of elimination. Steps of the advance can usually be discerned by the lopping off of valueless survivals. The broader syntheses through nature's analytical working, comparison, selection, and ever-renewed coördination, are resolved into more centralized and richer organizations. And human nature, likewise, refines itself by specification. Along with the process of differentiation, integral contractions take place wherein the less good gives way to the better as values are estimated according to the purposive workings of the organism. Man realizes himself more per-

¹ Cf. *Three Essays on Religion*, p. 69.

fectly, *i.e.*, successfully, as he becomes acquainted with himself compositely, in detail, aware of mixed and combating motives, varied and crossed sentiments, of the pluralistic situation within himself. But to advance means to refine, *i.e.*, to judge, choose and discard. In the end, consciousness, as a self-principle, is more and more exclusive in relation to the ever-increasing richness of experience; and character necessitates constant revaluation and reconstruction in order to maintain its intrinsic worth.

The religious man attains the highest unity, not at the sacrifice of the elemental multiplicity of experience, but at the sacrifice of what he is unwilling to identify with himself; he is more concretely an individual, not at the expense of experimental experience, but at the cost of what he refuses to incorporate into himself; he is a more unique personality, not because appreciations are limited or pioneer adventures are shirked, but on account of his persistent determination to ally himself only with the highest and best things in the world. The religious man, in other words, is intensively and integrally good because he dispenses with the less worthy in order to concentrate upon that which alone is worth the greatest effort. In brief, the best man is *specifically* good; there is an originality in his goodness, and a manifest moral partiality in his estimate and appropriation of values. If "he sets his teeth" in the not-self of his environment, he will not bite off, or rather, he will not swallow, what the best of him can not digest and assimilate properly.

Such a specification of virtue is the inevitable result of moral activities within the particular station of the individual. No one person can have a monopoly of the virtues; and if it were possible, he would be able to exercise but those which pertained to his own peculiar office and vocation. Consequently we see the soldier conspicuous for courage, the economist for prudence, the student for intellectual integrity, the man of average ability for temperance, the prophet for spiritual insight, the priest for piety and so on. A harmony of all the virtues, coördinated and organized, such as Plato delineated in the *Phædrus* under the picture of the charioteer who drove the passions courageously and prudently is practically obsolete as an ideal because of the unreal abstractions involved in the conception. The *real* man exercises and perfects only those virtues which are applicable to his own personal situation. It may be concluded, then, that personality grows and is shaped according as it excludes all factors which contribute nothing to, or would detract from, the dominant purpose controlling specific self-realization.

If this brief sketch of the extension and intension of human personality is true in the main, may we not unhesitatingly believe that the

progress of religion will follow much the same lines? Some religious material will be dropped naturally from time to time as it is outgrown and outworn, and the rules of this elimination will be subject to a principle of discrimination. What this principle is, is exactly the subject of our enquiry. When we see that one religion excels another, that certain elements are obviously more valuable than others, and that many survivals have become worthless and must accordingly be dispensed with as irrelevant or incompatible with the more important factors, then the problem arises: What is the standard gauge? It is the answer to this question which will nicely determine the exact field of religion.

Let us see what actual signs point to the growing exclusiveness of religion, in what way the secular realm is being enlarged for greater gain to that which constitutes the essential quality of spiritual life. For example, then, what we shall eat, what we shall drink, what we shall wear, how we shall plant our fields, how we shall build our temples, what we shall teach, what books shall be written and the thousand and one details over which in the past religion exercised and exorcised her autocratic say are now excluded from the province of the best religious faith and practise. We have offered the purely material and mechanical field to science that religion may gain the more freedom in her own realm; we have allowed the philosopher freer play in the realm of truth, permitted art a greater liberty in the region of the beautiful, surrendered to psychology the secrets of our inner life, to sociology matters of organization, to the state, matters of law—all that religion may enrich herself more speedily after her special liking. We have sold all, or almost all, we possess for the one jewel of great price; we pay the greater price to Cæsar that God may receive the purer treasure. If, then, religion abandons much of her wonder to philosophy and much of her miracle to science and many personal mysteries to psychology, and surrenders her beauty largely to art, her organization and statutes to sociology and economics, the importance of what she refuses to relinquish is quite obvious.

The answer now to our problem is not difficult to see; but do we realize what this means or is going to mean to the future of religion? The final stronghold of religion being *moral life*, toward which end all present religious movements are conspicuously pointing, is this an inspiring sign of the times or a weakness in modern spirituality? I venture to state that this pressure upon and centralizing in moralities is beyond praise and must prove a source of unlooked-for hope in these troublous times; for the moral-religious merger means a new vision of human character transcending the present form of our

ethos and all out of proportion with its development hitherto, as well as a fresh glory for religion in bringing heaven down to earth.

It is, therefore, in this special field, morality in its widest connotation, that we see religion crowding back and the portent is momentous. And just here in spite of the dangerous forces which have assaulted the fair moral stature of humanity, if the most trustworthy signs of the times are to be accredited, religion appears to be easily holding her own. She can not and will not permit a trade or sport in the moral nature of mankind. We have sadly learned *nostro periculo* that a large measure of personality is not equivalent with goodness. Individual self-realization or community-realization is attended with the greatest dangers of distortion when divorced from spiritual control. The horrible fact of dæmonic personality is only too well disclosed by the ruthlessness of "civilized" warfare. We have beheld with moral terror the dispassionate elimination of all that unfits a person for the achievement of his ends and the common ends of his fellows regardless of a scale of values which should determine the better and the worse, resulting, not simply in the crime of a renaissance of barbaric civilization, but in something more intolerable, namely, the felonious act of producing the personality of the savage—and not the mere savage, unintellectual and cruel, rather the savage as an ideal, as the amoral apotheosis of force.

Strange as it may sound, we must admit that the incorrigible enemies of peace are idealists. Ideals, when genuine, are intimate, individualistic and unique; which is to say, ideals are nothing if not a matter of singular personality. They are the stuff that is naturally radical and wilful. Hence the danger lies exactly here: the fact that it is the instinctive tendency, the whim, the spirit of an ideal to have its fling, to play truant, to adventure into romance, to forsake the familiar in search of the unfamiliar in ways remote. In other words, ideals are the flower of moral abstractions; they sprout and flourish upon a stock of truth which grows out of the philosophic or metaphysical mind; they delight an ambitious imagination with an intoxicating fragrance until nothing can withstand them—nothing but the hard facts of life and the opposition of other ideals. It follows, then, that because of the superior force of idealistic energies they require the special discipline of the most practical judgments of value that religion can formulate, or character is ruined.

To supply this standard of personal worth is the rationale of religion. And such is the moral emergency of the present-day world. It is exactly at this point and with this definite end in view that religion enters the social conflict. All of which suggests the differentiating feature of religion, namely, moral interests. In this field,

religion must continue to exercise and maintain her peculiar power, to magnetize the moral compass, to spiritualize ideals, to gauge the perfect measure of the right. Morality is the child, religion the parent; but forever "the child is father to the man."

The antithesis of the Christian standard, which I have tried to do justice to, along modern lines, is that of the orthodox Pharisee, a product of the inclusiveness of later Judaism with its rigid law. The wonderful moral impetus given to Old Testament religion by the prophetic analysis of the better and the worse, of the good and the evil, of the righteous and the wicked, was neutralized and blocked by this type of religious inclusiveness. The curious anomaly of the Pharisee, *viz.*, a separateness from worldliness combined with an attempt to bring all of life completely within the compass of the Law, presents a picture of religious inclusion. This "separateness" from the world was a *contradictio in adjecto* to the rule of life professed and a shallow unreality. The truth of the matter is that the Pharisees identified worldliness after all with religion. And this was precisely the trouble. His religion was too inclusive; it had no distinct character which permitted the functioning of comparative values; so that there was no better and worse, no greater commandment, in his conception of moral and spiritual life. All was constituted on the same level, the *dead* level, so to speak.

It is in this sense that modern religion may be characterized as finite; because of a specialization in moralities. If we are willing to withdraw from other fields, it is because there is one pearl of great price which absorbs all our enthusiasm; and though this fine spiritual exclusiveness may involve the abandonment of some long-cherished cosmic beliefs and the difficult sacrifice of many dear hopes, and though haunting clouds of darkness may hover over the unexplored ground where ultimately religion and morals meet, still no truly loving heart need fear self-deception when the spirit of Christ manifest in any good action whatsoever is identified with Christ himself. For love is the most accurate moral compass with which human nature is endowed.

In this highly specialized and highly secularized world of ours—rightly so—our alarm at the loss of much that had been thought to belong indissolubly to religion, which is now being withheld from her without protest, may be assuaged by recollecting that these same limitations of religion will intensify her power. This is well illustrated in the history of Israel, Christianity in the making, for the Hebrews were one of the most narrow-minded nations, intellectually, that the world has ever seen: they could not be compared favorably with the Egyptians for mechanical and industrial ability, nor with

the Phœnicians for commerce, nor with the Philistines for art, nor with the Assyrians for war, nor with the Babylonians for general versatility, nor with the Sumerians for literary originality, nor with the Greeks for philosophy, nor, we may add, with the Anglo-Saxons for science; but, nevertheless, they thought the more profoundly in religion and the more practically in morals.² All of which goes to show that an intensification of spiritual experience more than compensates for a want of general inclusiveness.

In conclusion, let me summarize the results of this enquiry. Some principle of differentiation is necessary to mark the proper sphere of religion since one of the most conspicuous signs of modern religion is the breaking up of the traditional religious hegemony that has so long prevailed over all departments of life. Religion also must make clear her distinctive character because the conditions of definition require a positive shrinking in extension and a reduction to more precise specification. The terms in which religious concepts are expressed may be the changing phases of life of successive generations, but the field of religious interest and action can not change. We are helped in marking out the boundaries of this permanent field by the successful tendency for specialization conspicuous to-day in all directions and approved by the best intelligence. And this, in respect to religious activities, is indubitably the field of moral interests and all that makes for righteousness in character and in nationality. Here lies the impregnable stronghold of the Kingdom. From whatever planes of activity religious forces withdraw, here the retreat must ultimately halt; and within these specific lines religion must forever exercise her control. What we are beginning, then, to see is this: religion not only subscribes to and sanctions the best morality, but moral character itself is religion objectified and realized.

H. C. ACKERMAN.

NASHOTAH, WIS.

INTELLIGENCE AND INTELLECT

IT is well known that certain words and terms make a greater appeal to the mind of the public than others. Psychologists are perhaps not to be included among the public, inasmuch as they, in common with all other scientists, are supposed to select their terms and not to allow themselves to be guided by ordinary usage. But try as one will, there are certain circumstances which rule over the fate

² Cf. Laura H. Wild: *The Evolution of the Hebrew People*, Part IV *passim*.

of words and so bring it about that the one becomes a technical term and is discussed interminably in books and periodicals while the other, with just as high a pedigree, is relegated to the plane of popular parlance.

Such has happened with the two words "*intelligence*" and "*intellect*." Both are derived from a common source, *intelligere*, which, when analyzed into its components, means *to choose, to pick out* (and incidentally shows what good psychological insight the Romans were possessed of); both ran almost a parallel course since the days of the Renaissance, yet of the two, the term *intelligence* had the more eventful career, until it has even been made to turn a behavioristic somersault, while *intellect* is still the staid and dignified entity as of old, and as a result, is doomed to the traditional treatment of lexicographers and literary men.

From the very first, the word *intelligence* had the advantage in its range of applicability. The distinction drawn between *intelligence* and *intellect* in the *Dictionary of Philosophy and Psychology* is not clear-cut, though the tendency "to apply the term *intellect* more especially to the capacity for conceptual thinking" is noted. The delineation of the same term in the *Encyclopedia Britannica* is carried out along similar lines. "A man is described as '*intellectual*' generally because he is occupied with theory and principles rather than with practise, often with the further implication that his theories are concerned mainly with abstract matters; he is aloof from the world, and especially is a man of training and culture who cares little for the ordinary pleasures of sense." It must appear evident to most readers that such a description of the intellectual man does not provide us with the cues for discriminating between *intelligence* and *intellect*, and at the same time draws a too sharp antithesis between two qualities which may subsist in the same individual. Bismarck, though concerned with practical matters and not a theoretician, might have been an intellectual person, even if he did not actually happen to be such. Besides, until we were able to draw the line of cleavage between the theoretical and the practical, our criterion would be of no avail. The same observation applies to the account in the *New International Encyclopedia* in which the intellectual man is said, according to current usage, to possess "special ability in dealing with the abstract and theoretical, while the intelligent man is efficient in concrete situations and practical affairs."

In his article on "Animal Intelligence" in the *Britannica*, Lloyd Morgan sets down the difference as one between *perceptual* (sensory) and *conceptual* (ideational) modes of behavior. This distinction was probably grounded in the results obtained in animal psychology, so that thanks to the labors of Romanes, the phrase "Animal

Intelligence" became one of the most widely used expressions in psychology. But in spite of its empirical background, the phrase pointed to a particular interpretation which need not necessarily be accepted, and which, furthermore, was vigorously attacked by Wasmann and Mivart.

Prof. Warren seems to think that the term intelligence, as applied to animals in the eighties and nineties, had acquired a distinctly behavioristic meaning, and points out that Thorndike, in particular, applied it to his mazes and trick fastenings. Commenting on my discussion of the relation between intelligence and behavior,¹ he writes "I have, myself, the feeling that we could very profitably revive this meaning so as to distinguish between intelligence and intellect; most of the modern mental tests are really intellect tests, that is, tests of intellectual intelligence as distinguished from the motor or skill intelligence tests which are applied to animals." It was this bit of comment which occasioned the writing of this paper, especially as there seems to be an ever-growing need of a criterion to determine which is intellect and which is intelligence, the more so because the two are regarded as correlative terms, which means that what we hold about the one will affect our view of the other, as is evidenced by the comparison of Lloyd Morgan's and Warren's views. If intellect refers to the conceptual, intelligent will involve the merely perceptual; and, if we take it that intelligence comprises all performance acts, our distinction will be one between the motor and sensory functions of man. In that case even a moron, inasmuch as he is able to assimilate knowledge, may be regarded as possessing intellect.

Probably every educated person employs the two words in slightly different connections. A highly cultured person, like Carlyle or Emerson would, in all likelihood, not feel flattered to be referred to as very intelligent. To the man in the street such a recommendation would no doubt appeal as an acceptable compliment. Intelligence and intellect seem to be made of the same texture, but differ in their degree of complexity. This distinction, however, is not always recognized by psychologists. Thus, Thorndike in his *Animal Intelligence* speaks of animal intellect² as evidently an interchangeable mode of expression for animal intelligence, while most intelligence testers, as Warren observes, are really occupying themselves, to a considerable extent, with the problem of determining the intellect of their examinees. Largely with this consideration in view, I have

¹ A. A. Roback, "Intelligence and Behavior," *Psychol. Review*, 1922, Vol. XXIX, p. 54ff.

² E. L. Thorndike, *Animal Intelligence* (1911), preface p. v. and Chapter VII.

been impelled to call my own series of tests for superior adults "mentality tests," and have explained elsewhere my reason for so doing, *viz.*, that "intelligence" has been used to "designate a much more comprehensive state of affairs. Social tact and *savoir faire*, as well as mechanical ingenuity and motor coördination, are all subsumed under the general category of intelligence. It is obvious, however, that what we can concern ourselves with here is at most the analysis of situations that are distinctly of a non-social and non-mechanical sort."³

The distinction between intelligence and intellect is a very genuine one, but it does not strike me that the essential difference lies in the fact that the one characterizes motor skill or even mechanical ingenuity and the other applies to abstract reasoning. To be sure, the term animal intelligence was in vogue among animal psychologists for a long time to designate the capacity for motor learning in infra-human subjects, but in all such cases it is my belief that the aim of the investigators was to prove that *animals possessed mind, that they were capable of understanding situations*. Such was certainly true of Romanes and Wesley Mills. The substitution of the term animal behavior for animal intelligence was due in large part to the realization that we are on slippery ground whenever the question of interpreting the mental state of an animal crops up. No assumptions are necessary—and one might add no general conclusions are forthcoming—on the basis of an animal-behavior psychology. Another reason for the shift of terms is probably the desire to break down the barrier between animal psychology and biology so that workers in the two fields might carry on their pursuits on common ground. Thorndike's book under the title of *Animal Intelligence*, which came out in 1911, was, it will be remembered, an amplification of his monograph published in 1898, when the term behavior, used in connection with animal reactions, was still waiting for Jennings, a biologist, to give it currency. Hence the somewhat conservative caption to a book which really was an influential factor in modifying the older views about animal intelligence.

The distinction then between intelligence and intellect does not appear to be primarily one between motor capacity and the power of abstraction. Intelligence is more inclusive than intellect, but, at the same time, it is marked by a certain desultoriness. It may appear in detached form. This view does not necessarily argue for the multimodality of intelligence. An individual may meet with success in almost everything he undertakes to do and yet not be classed

³ "Report on the Roback Mentality Tests at Simmons College," *Simmons College Review*, 1921, Vol. III, p. 314.

with the intellectual. What is it then that gives one the stamp of intellect? It is, to my mind, the *concatenation of the most essential intelligences into a systematic whole*—most essential for that purpose, of course—that constitutes the distinguishing feature of intellect. This quality must not be confused with what has been called creative intelligence, for a great artist or a great inventor is not necessarily a man of great intellect, nor must the distinction be viewed in the light of Stern's proper dichotomy between genius and intelligence.⁴ That mental integrity constitutes a prime condition of intellect is, to a large extent, recognized in popular parlance when we speak of Aristotle *being* a great intellect, though an ordinary man is said to *possess* intelligence. This usage is not a mere synecdoche, but represents the deep-rooted conviction of educated people which experience has taught them. Cæsar was probably more intelligent than Marcus Aurelius, but Marcus Aurelius was the greater intellect. A man may get along with people, who nevertheless is unable to understand them or appraise their merits and faults. Another may not be so successful in his dealings with the world and yet have a keen insight into affairs. The latter is the more intellectual. It is he who not only grasps a situation, though not necessarily every situation, but is also able to relate his experiences and observations to one another so as to build up a *weltanschauung* (which need not be a system of philosophy). Paradoxical as the statement may sound, it is my belief that there are cases when one knows how things are done without being able to do them himself. An intellectual man, then, will not always be thought intelligent in the accepted sense of the word, for his capacity will not comprise possibly the wide range of activities covered by intelligence, but by way of compensation, he has a great deal more to show in the upper levels of the narrower range—upper because the activities in that region presuppose a knowledge of the more common activities. The intelligent man lives in a shed extending over a vast area; the man of intellect dwells in a sky-scraper, communicating with every nook and corner of the building and aware of every happening in his abode and its bearing upon every other happening.

In short, the secret of intellect is *coördination* on a large scale. Naturally, the experiences requisite for such an activity must be plentiful, comprising not only one's own but those of many others. For this reason erudition has been considered the basis of intellect, and rightly so. The perfect type of coördination would involve an acquaintance with all the facts in every conceivable department of knowledge. The more data we have at our command in the most

⁴ W. Stern, *Psychological Methods of Testing Intelligence*, p. 4.

diverse fields of human endeavor, covering the greatest period of time, the more we approximate this ideal. It does not follow that the professional philosopher is the man of intellect par excellence, though his particular studies must surely provide him with the best opportunity for such attainment. Herder, Schopenhauer, Carlyle, and Renan, disparate as they all are from one another, seem to typify the intellectual in modern times. In general one may say that the romanticists have the advantage over the classicists in this regard because their scope extends over greater dimensions. The quality of the coördination is probably superior in the latter, but as has already been intimated, no matter how careful we are with our selection, if the wherewithals are not within our reach, the choice of the materials can not but be faulty.

The statement has been made above, and it accords with the received view, that intelligence is a more comprehensive term than intellect. But the subsequent discussion goes to show that this comprehensiveness relates to the *situations to be met with by the individual*. Now a great many of these situations are not taken into account in the adjudication of intellect, but vastly more is included instead, to wit, *the experience of the race* and its outstanding figures. The man of intellect is not called upon to settle a strike, to repair a lock, to act the affable host and the like; his task is much more enormous, for he deals with a vast body of complicated facts which he must sift and colligate and reflect on.

After setting down the criterion of intellect and intelligence, we have still to consider the constitutional difference between the two. In the man of intellect there appears to be an *urge towards systematization* which, if not lacking, is at any rate not pronounced in the intelligent person, who, to be sure, may evince an ambitious spirit, may even direct all his energies towards becoming a leader. In such an individual the "drive" towards his goal may be actually consummated, but often the means employed, the very skill exercised, betrays the want of mental integrity which is a *proprium* of intellect. The fact that single-mindedness was not always a characteristic of intellectual men—Voltaire, for instance—should not invalidate my thesis. As in everything else, deviations from a standard are to be measured in relation to the components which go to make up the criterion and treated, moreover, on a comparative basis. The flaw in Voltaire's character must indubitably have affected not only his results but his coördinating ability as well.

A. A. ROBACK.

BOOK REVIEWS

The Works of Aristotle Translated into English, Vol. X., *Politica, Oeconomica, Atheniensium Respublica*. Oxford: Clarendon Press, 1921.

This tenth volume of the great Oxford translation of Aristotle, edited by W. D. Ross, must be welcomed by all students of Aristotle and should be welcomed by all students of politics. The re-issuing of the Jowett translation of the *Politics* is explained by the editor as follows. "Piety towards Dr. Jowett, whose munificence has made possible the production of this translation of Aristotle, suggested that no new rendering of the *Politics* should be attempted." Certainly no other English translation reads so well as Jowett's, but unfortunately the reader should be conscious that he is frequently reading Jowett and not Aristotle. I give one illustration of the liberties which Jowett took. The lines 1258 b, 8-11, translated literally, read about as follows: "We have discussed sufficiently the science of the subject (business or finance), and ought now to discuss its practise. In all such matters freedom reigns in understanding them, but necessity in practising them." In Jowett's translation they read: "Enough has been said about the theory of wealth-getting; we will now proceed to the practical part. The discussion of such matters is not unworthy of philosophy, but to be engaged in them practically is illiberal and irksome." The editor, in this case, has given in a footnote Bernays' translation: "We are free to speculate about them, but in practise we are limited by circumstances." This method of calling attention to improvements in translation or to more recent scholarship on the texts is followed throughout and is valuable. But the revision of the Jowett translation thus effected is still quite inadequate. The Welldon translation is superior in point of accuracy, but it too leaves much to be desired. For instance, in Welldon the above passage reads: "Having now sufficiently discussed the theory of Finance, we have next to describe its practical application. It is to be observed however that in all such matters speculation is free, while in practise there are limiting conditions." Welldon here corrects Jowett's error, but he introduces an error of his own in the first part of the passage. There is still needed an English translation to equal the French of St. Hilaire, which has the merits of both accuracy and a fluent style.

E. S. Foster's translation of the *Economics* is a great improvement over the old Walford translation in the Bohn Series, and makes the treatise very attractive reading. It deserves to be much more generally known than it is. The first book is generally re-

garded, following Zeller, as not genuine, although on rather slight evidence. It is an excellent illustration of the "common-sense" character of Aristotle's philosophy, consisting of observations on how households are successfully conducted, observations so commonplace as to escape being written except by Aristotle or in proverbs. One is interested to read in Aristotle, for example, that "there are occasions when a master should rise while it is still night; for this helps to make a man healthy and wealthy and wise." The second book of the *Economics* is obviously post-Aristotelian, and consists of a collection of most entertaining anecdotes about royal, satrapic, political and personal economy.

Sir Frederic G. Kenyon's latest revision of his excellent translation of the Athenian Constitution needs no further comment, as his work both as a translator and as an editor of the texts, is well known.

The addition of copious footnotes and the careful indexing of the books make this edition of Aristotle all the more attractive.

H. W. SCHNEIDER.

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Étude sur le Terme ΔΤΝΑΜΙΣ dans les Dialogues de Platon.

JOSEPH SOUILHÉ. Paris, 1919.

The aim of this modest and thorough piece of work is, first, to help make precise the Platonic vocabulary and thus the Platonic philosophy; second, to prepare a more complete knowledge of the Aristotelian theory of potentiality (p. xi). To achieve this aim M. Souilhé follows the models of Ritter's "*Eἶδος Ἰδέα und verwandte Woerte in den Schriften Platons*" published in his *Neue Untersuchungen ueber Platon* and of A. E. Taylor's "The words εἶδος, ἰδέα in pre-Platonic literature" from the *Varia Socratica*.

Probably no model could be better for this sort of work than Mr. Taylor's, especially if one is equipped with as sure a lexicographical sense as his. For it emphasizes the actual use of the words in question and not what people say the use is. Thus by actual comparison and analysis one obtains not a mere unsubstantial guess at what the Greeks may have been talking about, but a careful determination made inductively with the evidence plainly exhibited. Plato, in this case, is put in a Greek setting among his fellow thinkers. To study him thus is surely to run less risk of modernizing him, if nothing else, and that is of course one of the easiest mistakes to make in interpreting the ancients. The result incidentally throws light on the whole workings of the Greek scientific mind, a field which lies outside M. Souilhé's immediate interests, unfortunately.

The study begins with a resumé of the primitive use of the word *δύναμις* and its derivatives. The texts here are taken from belles lettres, from Homer to Demosthenes. It is found that it has four senses: first, the primitive notion of physical force which develops to any kind of superiority; second, the power of inanimate things, money, sickness, law; third, by transferences to the things which have the power and superiority, armies, governments, fortunes; fourth, reducing the idea of value, simple ability, *posse not potentia*.

The use of a word in belles lettres is usually more indicative of its connotation than its denotation. One would look in vain today for the meaning of Royce's "loyalty," Dewey's "situation," Santayana's "essence," Watson's "behavior" in the speeches of Congressmen, the poetry of the Imagists, or the dramas of Mr. Shaw. But one might find there a certain haze of suggestiveness which might be of interest. So in M. Souilhé's study these passages are utilized as a simple background against which are thrown the words as used by the mathematicians, the physicians, and the sophists.

Δύναμις in mathematics is found to mean "fundamental or distinctive property." Thus the tetrade is called the *δύναμις* of the decade because the equilateral triangle which is used to represent *ten*, the tetraktys,¹ is that from which the decade is developed. This is a technical application of the popular meaning "superiority." For, as in Aristotle, that which produces is superior to that which is produced. Similarly the square of a number is the second power (*δύναμις*), which looks as if the mathematicians had an eye for the generative functions in the operations of their science (p. 29).

An analogous use of words is observable in the treatises on medicine (p. 36). There substances are held to manifest themselves by their qualities, hot, cold, bitter, salty, and the like. But the cold differs from the hot, the moist from the dry, in the effects they produce. Both the power substances have to make themselves manifest and the power they have to act in characteristic ways are *δυνάμεις*. The body of texts cited by M. Souilhé from the physicians shows how the term we have grown to look upon as almost exclusively Aristotelian was in reality one of the scientific terms of his contemporaries. "In the treatises of the Hippocratic Collection," says M. Souilhé, "in those above all wherein the influence of the cosmological ideas of the first physicians² is particularly evident, the term *δύναμις* designates the characteristic property of bodies, the external and sensory side, that which permits us to

¹ V. Burnet's *Early Greek Philosophy*, 3d ed., p. 102.

² In the Greek sense of the word I suppose.

determine and specify them. Thanks to the *δύναμις*, the mysterious *φύσις*, the substantial *εἶδος* or primordial element, makes itself known, and makes itself known by its action. Starting from this point we understand . . . how easy it was to establish a perfect equation between *φύσις* and *δύναμις*" (p. 55f.). The same use of the word is found in the fragments of Gorgias and Isocrates.

In Plato the word has more philosophic importance than elsewhere, but here too it means that quality which beings have to reveal to us their peculiar constitution, shown in action or in being acted upon (p. 149). This is the same as the Hippocratic use of the term. But M. Souilhé does not agree with Ritter that Plato equates *δύναμις* and *οὐσία* (p. 156). Small though the detail may be, it is what determines in large measure whether Plato's universe is to be interpreted as a process or as something static. If one's imagination is allowed to play on the various consequences, one will see the importance of knowing just what Plato did mean, if that be a possibility.

It seems a greater possibility now that we have studies of Plato's vocabulary which are being done by scholars with sufficient equipment for the task. The study of M. Souilhé may be open to unfavorable criticism in detail, but one would have to be very fussy to accord it anything but praise as a whole. He seems to have approached the problem with as few preconceived ideas as possible and to have spared no pains to investigate it with all thoroughness. One could legitimately hope for a more extended discussion of the results, particularly of their effect upon the interpretation of Plato's philosophy as a whole. That may of course be too much to ask of a study which has purposely limited itself to a special phase of a problem. It does not seem likely, however, that students of Plato can afford to neglect this work, certainly not university students.

GEORGE BOAS.

THE JOHNS HOPKINS UNIVERSITY.

JOURNALS AND NEW BOOKS

SCIENTIA. November, 1921. *Euclidean Constructions* (pp. 345-354): H. P. HUDSON (Croydon, England).—Illustrations of how algebraic analysis can reveal what can and what can not be done with ruler and compass. *L'origine de la chaleur solaire* (pp. 355-370): JEAN PERRIN (Paris).—Admirable exposition of the interesting hypothesis that in the process of forming heavier and heavier atoms the mass of the sun is diminished, being partly converted into energy.

This energy would suffice to keep up the present solar radiation for several trillion years. Radioactivity is a secondary reverse process of minor importance. A paper decidedly worth consulting. *Le milieu géographique et la race* (pp. 371-380): A. A. MENDES-CORRÊA (Porto).—Suggests the difficulty of proving specific cases of influence exercised on racial characters by geographic environment, yet concludes that environment must, nevertheless, be an important factor. *Buts et résultats coloniaux de la guerre mondiale. II. Les résultats économique-juridiques* (pp. 381-392): G. MONDAINI (Rome).—Emphasizes the reactionary character of many of the recent legal changes in the status of colonies throughout the world and especially in the Congo. *L'œuvre mathématique de Klein* (pp. 393-396): F. ENRIQUES (Bologna).—A characterization of Klein's work in synthetic geometry, with reference to his preparing the way for Einstein. *Reviews of Scientific Books and Periodicals*.

Báez, C. Rangel. *Nuevas Orientaciones Científicas*. Caracas, Venezuela: Tipografía Vargas. 1922. Pp. 56.

Gentile, Giovanni. *The Theory of Mind as Pure Act*. Translated from the third edition, with an introduction by H. Wildon Carr. London: Macmillan & Co. 1922. Pp. xxvii + 277.

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NOTES AND NEWS

AMERICAN PHILOSOPHICAL ASSOCIATION: WESTERN DIVISION

It will interest the members who could not be present at the Lincoln Meeting, April 14th and 15th, to know that in addition to holding the announced programme, ten names were added to the roster of the Western Division, and the following actions were taken: (1) that it is the wish of the Western Division that the first Joint Meeting of the two divisions be held next December, in accordance with the expressed wish of the Eastern Division, and that, if it be agreeable to the Eastern Division, it be held either in New York City or vicinity; (2) that the December joint meeting of

1922 take the place of the Easter Meeting in 1923, subject to the approval of the officers-elect.

It will be remembered that a year ago, at the Chicago Meeting, the Western Division proposed—and the Eastern Division at its last December Meeting concurred in the proposal—that the first Joint Meeting of the two divisions should be made the occasion of the delivery by John Dewey of the Paul Carus Lectures. At Lincoln the question was raised whether there should be the usual programme in addition to the Paul Carus Lectures, which might possibly occur on Wednesday, Thursday and Friday of Christmas week. The general opinion was that there should be such a programme, and it was left to the two executive committees to decide whether it be a joint programme, or two entirely independent programmes, or two programmes with alternating sessions so that all could attend both. Further notice will be sent as soon as the plan is worked out.

Will the members of the Western Division permit the Secretary to mention the importance of making this first Joint Meeting a complete and, if possible, enthusiastic success? The idea suggested by Mrs. Mary Hegeler Carus's gift of a thousand dollars for the coming series of Paul Carus Lectures, *viz.*, the idea that it would be desirable, if possible, to establish such an American Lectureship in Philosophy on a permanent foundation, is in mind as we write; an enthusiastic appreciation of this idea, shown by a large attendance and a cordial spirit at this first meeting, might help much toward that very desirable end.

The executive committee elected for 1922-23 are: President, E. L. Sehaub; Vice-President, R. W. Sellars; Secretary-Treasurer, G. A. Tawney; E. D. Starbuck, L. P. Brogan, A. W. Moore and Rupert C. Lodge. It is hoped that reprints of the Lincoln address of President E. S. Ames on "Religious Values" will be ready for distribution soon. It will include a revised list of members.

Professor Dewey has not yet named the topic of his Paul Carus Lectures, but he intimates that they will be a study of the various critical approaches to Instrumentalism with a view to clarifying the issues it raises. It is sure to be of immense interest.

G. A. TAWNEY.

UNIVERSITY OF CINCINNATI.

Professor Piek, the well-known neurologist at Prague, is about to retire from teaching and wants to sell his library. It contains some 3,000 works on psychiatry, neurology and psychology in English, French and German, besides 7,000 reprints and theses. The price is \$4,000. Address Professor Arnold Piek, Jungmannstrasse, 26., Prague, Czechoslovakia.

THE JOURNAL OF PHILOSOPHY

THE NEW MATERIALISM

ONE of the most characteristic phenomena of the very disintegrated thought of our time is the recrudescence of materialism. From Büchner's or at any rate from Tyndal's day to the end of the nineteenth century materialism had suffered a fairly steady loss in the confidence of the thinking world, so that twenty years ago it seemed almost a dead issue in philosophy. Ernst Haeckel was indeed still faithful to the lost cause; but even he, before his death, gave it up in all its more extreme forms and went over to the "double aspect theory."¹ But the sick man of philosophy, as materialism might have been called a few years ago, has quite recently taken on a new lease of life and has found a new circle of able defenders.

The reason for the steady loss of credence which materialism suffered toward the close of the last century was, as I think will be generally acknowledged, not lack of interest in it nor any peculiarity of the psychological atmosphere of the times nor a change in intellectual taste, but just certain very definite logical considerations. The materialistic doctrine had never been perfectly clear of itself but wobbled between two forms, both of which had their very great logical difficulties. One form of materialism identified consciousness with matter or with brain energy, especially with motion; the other asserted that consciousness, while not identical with the brain or its activities, was always the result of these activities and never itself a determinant either of action or even of the later stages of its own series. Now as the nineteenth century grew older, the difficulties involved in both these doctrines became clearer until they seemed at last quite fatal. The first formulation of materialism indeed left consciousness efficient, but did so only by an identification which was clearly seen to be nonsense if such a thing as nonsense can be. We know what we mean by pains and pleasures, by thoughts and purposes and desires; we know also, in a general way at least, what we mean by brain cells and their real and possible motions; and if we do not and can not know that these are different it is hopeless that we should ever know anything. The difficulties involved in the second formulation of materialism are per-

¹ Cf. his *Gott-Natur*, Leipzig, 1914.

haps not so obvious, but to nearly all thinkers of twenty years ago they seemed none the less fatal. These difficulties cropped out in many forms, but all the more important ones were variations of the denial of efficiency to consciousness. For example, how shall the materialist explain the development of consciousness, having denied to it any influence upon the activities of the organism? James's formulation of this question in his famous chapter on the Automaton Theory has never been satisfactorily answered and seemed in itself very nearly decisive. Equally ominous for materialism was the bearing of the asserted inefficiency of consciousness on human reasoning processes. For materialism maintains (as obviously it must) that each thought is determined wholly by the preceding or accompanying brain states and not at all by the preceding thoughts. This being the case, what we commonly refer to as reasoned conclusions turn out not to be reasoned at all but simply caused by the entirely non-logical mechanical laws of brain activity. There can not, therefore, be any such thing as logical necessity in any of our reasoning processes. The perception of logical relations has nothing to do with them, nor has even the recognition of rational probability; they are determined solely by mechanical necessity. The materialist is plainly bound to maintain this. He is still bound to maintain it when asked how he knows his theory is true. To this question he can not reply that materialism is the logically necessary nor even the reasonably probable deduction from the facts, for the perception of logical connections has nothing to do with guiding man's conscious processes. All he can say is that the mechanical processes of his brain make him think as he does, but that as for proving the truth of his or of any other theory, that is a thing impossible for man.

Many other considerations of this sort might be pressed with cumulative effect, as was realized by our predecessors; and to them they appeared decisive. In short the assertion to which materialism is necessarily committed that all the purposeful and intelligent activities of the individual, the construction of civilization, of human literature, philosophy and science, the entire evolution of conscious beings, have been utterly unaffected by consciousness and are merely the result of the laws of matter—this assertion, once it was fully grasped, seemed too preposterous for serious consideration. Other theories of mind and body might have their difficulties; but greater difficulties than these were hardly conceivable.

One further reason for the nineteenth century's definite rejection of materialism was to be found in the fact that the great motive which had led to the popularizing of this doctrine,—namely the de-

sire to give naturalism full sway through all the world of matter and energy—was fully shared by parallelism; that parallelism, in fact, was even more favorable to naturalism than was materialism (in its second formulation), inasmuch as it retained the theory of the conservation of energy quite intact. For these reasons the great majority of the adherents of naturalism went over from materialism to parallelism. Toward the close of the century both materialism and interaction seemed to be definitively abandoned, and parallelism remained almost without rival in possession of the field.

If the rise of parallelism in the last half of the nineteenth century was in part the cause of the decline of materialism, the present recrudescence of materialism is due in no small degree to the notable decline in the popularity of parallelism. The fickleness of Fortune has seldom been more tragically illustrated than in the slump suffered by parallelism in the last few years. The causes of this slump are to be found in the fact that once fully understood parallelism is seen to have logical difficulties of its own so serious as to be fatal; but our interest in parallelism for the present is confined to the effect which its decline has had in initiating a revival of materialism. For the naturalistic philosophers who could not feel comfortable in the parallelist camp are now trooping back to their old haunts and reviving their ancient loyalty. Most of them, to be sure, are not as yet under the old flag nor do they use the old designation; the majority call themselves behaviorists or neo-realists or pragmatists—or idealists. There are a few, however, who are frank enough to hoist the old ensign and attempt a serious resuscitation of materialism as such. Among the leaders of this movement I shall mention only Professors Warren, Montague, and Sellers. Professor Strong should certainly be added to this list—provided one could be sure that he is really a materialist and not still in some sense a parallelist. If he belongs in the former category his materialism rests upon an identification of psychic states with material particles. This, so far as it goes, would of course be open to the same objections as the first form of the old materialism. Professor Strong seems at times to accept this identification and to seek to make it more thinkable by distinguishing between the psychical and the conscious. In addition to this distinction one must keep in mind Professor Strong's fundamental doctrine that introspection is always indirect and of the past. If one puts these considerations together it follows that we are never directly conscious of our psychic states and hence that they may, for aught we know, be identical with the brain. Yet I can not see that this

really avoids the old difficulty; for if psychic states are really psychic it is hard to put any meaning into the assertion that they *are* brain; and if they are not really psychic the cognizing of them must be, and the old difficulty will break out in a new place. Furthermore, it is exceedingly difficult for me, at least, to see how panpsychism (to which Professor Strong still clings) is to be made consistent with his critical realism, or to understand how a psychic state can be extended and possess *really* (not as mere appearance) the various primary qualities. If it is by considerations such as these that the ills of materialism are to be cured I fear the cure will prove worse than the disease. However, I am not at all sure that Professor Strong means this for materialism, for, as I have said, he still clings (with modifications) to the panpsychic doctrine of his former days; and the "brain" which we contemplate retrospectively when we introspect our (past) psychic states does not seem to be the same "brain" which an outsider might examine with eye and hand. I should not therefore feel justified in including him among the new materialists, although many passages in *The Origin of Consciousness* seem to indicate that he is one.

Nor is it strictly correct to classify Professor Warren as a materialist, for he still clings to the double-aspect theory of parallelism. Yet much of his writing on the mind-body problem² is in defense of the thesis that all man's activities are explicable on mechanical or (very likely) physico-chemical principles; so that in effect if not in name he is a defender of the new materialism. The form which this defensive argument assumes, however, is a little difficult to make out. It seems, taken in the large, to consist of two closely related parts. In the first place it maintains that even the most complex forms of thoughtful activity are built on the same general plan as ordinary ideo-motor action, and that, inasmuch as the latter can be fully explained mechanically, the highest forms of intelligent conduct need no further explanation. The other form of Professor Warren's argument consists in pointing us to a brain correlate for every type of conscious process, including even the most complicated and "intelligent."

As to the first of these arguments, it must be plain to all that the similarity between ideo-motor and "intelligently guided" action is accepted and demonstrable only so far as it is irrelevant to the present issue; and that when the similarity is depicted in such

² "The Mental and the Physical," *Psy. Rev.*, March, 1914; "A Study of Purpose," this JOURNAL, Jan. and Feb., 1916; "The Mechanics of Intelligence," *Phil. Review*, Nov., 1917; "Mechanism versus Vitalism," *Phil. Review*, Nov., 1918.

terms as to make it relevant to the issue and decisive, the presentation of it as an actual fact begs the question. That there is a similarity of a very general sort between all forms of bodily activity, that they all have stimulus, central process, and response, will be denied by no one; but to assert in addition to this that increased neural complexity is the only other factor involved in deliberately guided voluntary action beside what one finds in automatic reaction is to start with the conclusion which was to be proved. Professor Warren seeks to make the transition from automatic to intelligent activity easier by using voluntary action in a purely perceptual situation as a middle term. In action of this sort the stimulus is an immediately perceived object to which we react, as we do in thoughtless ideo-motor action. On the other hand even highly complex and thoughtful activity such as chess-playing, which involves both invention and intelligent adjustment to new situations, is analogous to perceptual reaction. "An intelligent reaction based upon thought is essentially the same as the reaction to a perceived situation. The mental reconstruction is no different in character from the reconstruction of experience which is involved in a changing perceptual experience. . . . When one reacts to a *perceptual* stimulus one's motor activity is due to the fact that a certain physical collocation of particles exists and affects him; which means that his receptor apparatus is fitted to receive the impression of this collocation and that appropriate nervous pathways are established for reaction to such impressions. The same is true where the stimulus is a *thought*-complex; here one is reacting to certain *definite represented* physical collocations. Thought is merely an enlargement of the perceptual field. Intelligence means 'fit' reaction to environmental situations, whether perceived or pictured."³

Now while both complex intelligent activity such as chess-playing, and also ideo-motor action have doubtless certain things in common with intelligent reaction to a perceived situation, it is plain also that in certain things they differ from it. The opponent of materialism, who believes in the efficacy of consciousness, maintains that one of these differences lies exactly in this: that conscious thought aids to some extent in guiding intelligent perceptual behavior, and that conscious thought and conscious representations of merely possible situations which are never physically realized aid still more in guiding the higher forms of activity such as chess. Nor has Professor Warren said a single thing to disprove this view. As I read it, at any rate, his attempted reduction of intelligent activity to the type of ideo-motor action either reduces to a harmless

³ "The Mechanics of Intelligence," p. 612.

pointing out of irrelevant similarities, or else reads into the comparison identities which he has done nothing to prove, and which can not be admitted in advance without begging the question.

Professor Warren, however, seems to make his position more persuasive by the aid of his second argument. He of course does not deny that certain "higher" and more complex intellectual processes are involved in such things as chess-playing than in mere ideo-motor action. But in all these the really efficient factor is the brain aspect of the psychical process. It is the "neural processes known introspectively as 'thoughts' of future situations"⁴ which really govern the movement of the chess pieces. Similarly "satisfaction appears to be the subjective aspect of a neural condition stimulated by systematic processes which are autonomically induced."⁵ "Conscious endeavor to deliberate is a [neural] *set* in some direction." "Purpose" must not be taken to mean a conscious desire for a consciously conceived achievement but must be interpreted in behavioristic, and ultimately in physiological terms.⁶ When all conscious processes have been thus translated into neural terms, the explanation of the most complex human conduct in purely physico-chemical principles becomes relatively easy. "The complexity of the thought process means that a large number of neural connections within the brain are formed prior to each play. Intelligence means, in neural terms, that the less satisfying plays find no motor outgo—that only one out of many incipient reactions is completed."⁷

It would be unjust, I think, to accuse Professor Warren of begging the question in this argument. One might indeed justifiably do so if the argument be interpreted as an attempt to *prove* materialism. Plainly it *proves* materialism only on condition that we admit the neural interpretation of intelligence to be the sole proper interpretation; only if we start with the conclusion that intelligence as such has nothing to do with action. But as I understand Professor Warren, he does not mean to have his argument taken in so ambitious a sense. He wishes merely to show us what the materialistic hypothesis is, to show that it is possible to express human conduct in physico-chemical terms and that materialism is a perfectly statable view, even in face of such seemingly intelligent action as chess-playing.

If this is Professor Warren's point I think he has made it.

⁴ "The Mechanics of Intelligence," p. 613.

⁵ *Ibid.*, p. 618.

⁶ "A Study of Purpose," *passim*; also "Mechanics vs. Vitalism," p. 611.

⁷ "The Mechanics of Intelligence," p. 613.

Materialism is a perfectly statable hypothesis. The question still remains, Is it true? Is it or is the opposing hypothesis true? For as Professor Warren recognizes, the anti-materialistic view of intelligent activity is also perfectly statable. We have, in short, on our hands the two opposing hypotheses that we have always had, and the difficulties of each are exactly what they always were. The trouble with Professor Warren's type of materialism has always been that it denies the efficiency of consciousness and thereby gets itself into all the tangle of difficulties faintly suggested in the beginning of this paper. Nor can I see that Professor Warren has done anything to avoid or to diminish those difficulties. In fact he seems at times not even to realize what they are. At the close of his paper on "The Mechanics of Intelligence" he deals briefly with "the rôle of consciousness," and all he has to say as to the dangers which materialism runs in denying to consciousness all real efficiency is the following: "However much my actions may be determined mechanistically or unconsciously or subconsciously, it is my *conscious* experiences—by perceptions, feelings, imaginings and thoughts—that mean life to me. The proved value of consciousness is the subjective life which it furnishes to the mind." ⁸

It is of course plain that this response does not even come in sight of the real difficulties involved in the denial of the efficiency of consciousness—difficulties which resulted in the almost universal rejection of materialism twenty years ago. My conclusion, therefore, is that, so far as Professor Warren's arguments are concerned, the new materialism is in no better case than the old, and that, like its predecessor, it demands of us an amount of credulity utterly unjustifiable by any considerations it has to offer.

No one, I imagine, sees more plainly the difficulties we have just been considering than Professor Montague. To him, as to most anti-materialists, the efficiency of consciousness is so obvious that it is futile to deny it. In fact his position has so much in common with interaction that I should hesitate in calling it materialistic if he did not name it so himself. But, in spite of his interactionist tendencies, it is plain that he chose the right name. In his attempt, then, to resuscitate materialism he takes quite a different tack from that of Professor Warren. He goes back namely to something like what I have called the first form of the older materialism which identified consciousness with brain energy. His improvement upon the older view consists in giving up the obviously absurd assertion that consciousness is the motion of brain molecules and suggesting instead that it may be some form of *potential* energy stored up in

⁸ P. 620.

the brain, and presumably at the synapses. It was in this form that Professor Montague first expressed his hypothesis in his paper, "Are Mental Processes in Space?"⁹ and in his contribution¹⁰ to the *Essays Philosophical and Psychological in Honor of William James*, both published in 1908. The thought was carried farther, with certain epistemological modifications, in his essay on "Truth and Error" in the *New Realism* (1912), in which he identified consciousness with causality. More recently in his paper on "Variation, Heredity, and Consciousness"¹¹ he has proposed a new analysis of potential energy which in his opinion makes the identification of it with consciousness the more acceptable. According to this most recent suggestion, just as kinetic energy is motion, potential energy is rest. A mass may move, and it also may stick to the same spot. It may move fast and it may also stick fast. And as there are many degrees of the fastness with which a thing may move, so there may be many degrees of the fastness with which it may stick. For this new concept of relative immovability, or negative energy, Professor Montague proposes the new name *anergy*. His thesis now takes the form of asserting that the anergy present at the synapses of the brain is to be identified with consciousness. "When a vibration-wave proceeding over a sensory nerve is gradually brought to a stop by the resistance of the synapse, its energy is transformed from a visible kinetic form to an invisible and potential form. As its velocity passes through the zero-phase, its slowness passes through an infinity-phase. I ask you to entertain the suggestion that this *infinity-phase of slowness* is the common stuff of all sensations and that the critical points of zero and infinity through which the motion and slowness respectively pass afford the basis for that qualitative absoluteness and discontinuity that differentiate sensations from mere rates of change."¹²

Professor Montague has been at great pains to build up a new conception of potential energy and "anergy," and it is, I fear, a little unkind and unfriendly to assert that in all this he has done nothing to make the identification of consciousness with brain energy any easier. Nevertheless, that is the conclusion to which I am driven. It may perhaps be true that some of the difficulties which the imagination feels in identifying consciousness with moving molecules is avoided if instead we tuck it away quietly in the synapses where it may be out of sight, and make it less obtrusive to

⁹ *Monist*, XVIII, pp. 21-29.

¹⁰ "Consciousness as a Form of Energy."

¹¹ *Proceedings of the Aristotelian Society for 1920*, pp. 13-50.

¹² *Op. cit.*, p. 42.

the mind's eye by keeping it very quiet at many degrees of motionlessness. But in the last analysis it is really as impossible to put meaning into the assertion that *consciousness is rest* as into the assertion that it is motion. Once and for all, by our psychic states we mean one thing, and by the physical states of our brains we mean another; and it makes no difference whether these latter be interpreted as motion or as rest, as quantitative or qualitative, as kinetic or potential, as energy or anergy. I hasten to point out that Professor Montague foresaw just this criticism and has left no stone unturned to find an answer to it. In the first place he points out that his view of matter and of mind are very different from that of Descartes; that matter should be conceived as possessing the secondary as well as the primary qualities; and that "each man feels his consciousness to pervade not only his body but the outer space in which objects appear."¹³ If the limits of this article permitted it would be possible to show that both of these assertions would be very hard to prove, and a theory which rested upon them would be in much the same predicament as that of a house built upon the sand. As to the latter assertion especially, one wonders whether in Professor Montague's opinion the potential energy in the synapses of my cortex, which is identical with my consciousness, also "pervades the outer space in which objects appear." It is not necessary for our present purposes, however, to go into these matters; for even if we present Professor Montague with all the secondary qualities he wishes for his material world and endow his consciousness (and also his cortex) with the magical power of pervading all space, the identification of thought with brain energy would still be as absurd as ever. All the secondary qualities and all the pervasion of space imaginable will not help us in the least to see how his thought of Julius Caesar can be a certain amount of anergy in his frontal or occipital lobes. Professor Montague argues that if we accept his non-Cartesian view of space and consciousness, "then the change of the kinetic energy of the stimulus into the potential energy of the sensation will not be a mysterious change of sheer quantity into quality."¹⁴ This may be admitted, and the more willingly since it completely misses the point of the objection and still fails to put any meaning into the identification of consciousness with a "qualitative form of stress" in the brain synapses. Nor does it help matters to identify consciousness, as Professor Montague proposes to do, with the "higher phases of intensive energy."¹⁵ Finally the series of analogies which are pointed out

¹³ "Consciousness as a Form of Energy," p. 120.

¹⁴ *Op. cit.*, p. 131.

¹⁵ *Op. cit.*, pp. 131-132; "Are Mental Processes in Space?" pp. 27-28.

in several of Professor Montague's articles between potential energy and consciousness, while mildly interesting, are quite as unpersuasive and unimpressive as arguments from analogy usually prove. And even were they immensely more striking than they are they would do nothing toward overcoming the essential impossibility involved in the materialistic position. The hopelessness of the undertaking is seen even by materialists themselves—that is, by those who adhere to what I have called the second form of materialism. In Professor Warren's words, "If Professor Montague believes that potential energy is *another name* for consciousness—that the two are identical—his assumption seems like identifying visual surface with the mass which we lift."¹⁶

The identification of consciousness with energy and the denial of the efficiency of consciousness are the two horns of a dilemma which has in the past regularly proved fatal for materialism. Either one may be avoided but not both. The two defenders of the new materialism whom we have thus far considered chose different horns to be avoided. Each carefully evaded one of the horns, each deliberately took his chance with the other, and each, as I have tried to show, came to grief. The third and last advocate of the old faith whose position we shall examine is more wary than his colleagues. He knows the dangerous nature of both horns of the dilemma and means to be transfixed by neither. In two articles and in chapters of three books¹⁷ Professor Sellars has sought to expound a view which (though indeed he does not himself explicitly call it materialism) is, in its defense of naturalism, essentially materialistic; and yet at the same time he insists that consciousness is neither to be identified with matter or brain energy,¹⁸ nor to be robbed of its efficiency. "Consciousness is not extended after the manner of a physical thing for the very simple reason that it is not a physical thing."¹⁹ "It is nonsense to say that the motion of atoms is consciousness."²⁰ The function of consciousness "is to aid in the bringing together of the parts [of a neural system] into a new integration by the cues it affords. Literally it assists the brain to solve problems."²¹ "In deliberation we have a con-

¹⁶ "The Mental and the Physical," *Psy. Review*, XXI, p. 83.

¹⁷ *Critical Realism*, 1916 (Chapter IX); *The Essentials of Philosophy*, 1917 (Chapter XXII); "An Approach to the Mind Body Problem," *Phil. Rev.* for March, 1918; "Evolutionary Naturalism and the Mind Body Problem," *Monist* for October, 1920; *Evolutionary Naturalism*, 1922 (Chapter XIV).

¹⁸ *Critical Realism*, p. 223-24.

¹⁹ *Ibid.*, p. 244.

²⁰ *Essentials*, p. 260.

²¹ "Approach to the Mind Body Problem," p. 158. See also pp. 157 and 159.

scious process of survey, selection and combination. Ideas are led to their consequences and judged by them. And our decision certainly takes the form of a plan which guides our behavior and without which our actions would be quite different.”²²

Professor Sellars believes that his doctrine is able to avoid the two great difficulties of the older materialism (which we have been discussing in this paper) and yet to maintain a strict naturalism; and that it can do this by means of two advances which thought has made in our century. One of these is a more adequate epistemology than was possessed by former defendants of materialism, the other a new view of the nature of matter and its varied “levels.”

Critical realism, in contrast both to naïve realism, to neo-realism, and to idealism, identifies consciousness with the whole field of the individual’s experience and at the same time insists upon the reality and the knowability of the physical. Consciousness is that which can be immediately experienced—or rather it *is* immediate experience; whereas the physical world is never directly intuited (as naïve realism believes) and yet (contrary to the assertion of idealism) it can be indirectly known.²³ This physical world, moreover, modern science seems to show, is not organized on simply one plan, nor subject to merely one set of laws. “If evolution is more than appearance, it surely implies a change in the mode of activity of parts of nature.”²⁴ “It is no longer possible for a *fair* critic to identify naturalism with the mechanical view of the world.”²⁵

The new and true naturalism is, therefore, evolutionary naturalism. It must be remembered, however, that it is the material world that is evolving, and that the new laws of action on its higher levels are still the laws of the material world, nor can it be admitted by the defender of evolutionary naturalism that on any of these levels anything independent of the physical interferes with the regular physical activities. Anything like interaction between consciousness and the brain is strongly repudiated. The physical world is a closed system.²⁶ The laws of action of the lower material levels, moreover, are not abrogated. The new categories which apply to the new levels are continuous with the old ones and *must not con-*

²² *Evolutionary Naturalism*, p. 312. See also pp. 311 and 313. Cf. also *Critical Realism*, 238, 249–50; “Evolutionary Naturalism” in the *Monist*, p. 590.

²³ *Critical Realism*, pp. 215–17, 247; “Approach,” pp. 155–56. *Ex. Naturalism*, pp. 294–95, 303–05, 307, 310.

²⁴ *Crit. Realism*, 235.

²⁵ *Ev. Nat.*, p. 19. See also pp. 292, 297, 302, all of Chapter I; in fact the whole volume is devoted to this contention. See also “Approach,” p. 159.

²⁶ *Ev. Nat.*, p. 314.

*flict with them.*²⁷ The old laws must be obeyed, the new ones being apparently additive merely.

The question must of course immediately present itself to every reader: Can this kind of modified naturalism be really compatible with the efficiency of consciousness? Professor Sellars thinks that it can be, if the true relation of consciousness to the brain be understood. "My thesis is that the living organism, *when properly and adequately conceived*, includes consciousness."²⁸ "When the cortex functions, consciousness forms part of the nature of the brain."²⁹ The brain has at least two "variants," one of them neural activity, the other conscious content. Consciousness is thus a "variant" of the brain.³⁰ "Psychical entities are not substances, but rather peculiar characteristics of neural wholes and inseparable from them."³¹ "Consciousness is the brain become conscious."³²

This identification of consciousness with the brain does not, in Professor Sellars's opinion, involve the logical inconsistencies of the older materialism; for "we do not mean that the same categories are applicable to the *physical as known by the physical sciences* and to consciousness." "As classes thought about by scientists, the physical and the psychical have contradictory attributes. This must not be confused with the question whether the physical as an existent can absorb consciousness."³³ In other words, Professor Sellars does not identify consciousness *as such* with brain substance or brain activity *as such*; but both consciousness and brain activity are variants of one organism. He simply means that "consciousness is not alien to the physical."³⁴ The brain thinks.

We may be able to go all this way with Professor Sellars and still be unable to see any real answer to the question how naturalism is to be made compatible with the efficiency of consciousness. Consciousness and the neural activity which controls our muscles and our conduct may well be two "variants" of the organism; but if this be proposed as an answer to our question, the old difficulty

²⁷ "Approach," p. 154.

²⁸ "Approach," p. 152.

²⁹ *Critical Realism*, p. 247. See also pp. 223-29, 231; *Ev. Nat.*, pp. 298, 308; *Essentials*, pp. 264-65.

³⁰ "When we call it a variant of the brain we imply that it is inseparable from the brain and penetrates it with right as a part of the reality of the brain." *Crit. Realism*, p. 244.

³¹ *Ev. Nat.*, pp. 316 and 317.

³² *Crit. Realism*, p. 245.

³³ *Ibid.*, pp. 228, 229.

³⁴ *Ibid.*, Chapter IX.

breaks out again in the further question, What is the relation of these two "variants" to each other? The answer proposed by parallelism, that they are two parallel aspects of one reality and that they run along with no mutual influence, Professor Sellars explicitly and repeatedly rejects;³⁵ and he is, naturally, even more determined in his opposition to interaction.³⁶ To be sure, "consciousness literally assists the brain to meet new situations,"³⁷ yet consciousness and the brain never interact. Interaction would imply, as Professor Sellars points out, some degree of independence on the part of consciousness, at least while it lasts; and such independence and interaction would be incompatible with naturalism. It is, indeed, hard to see how the denial of interaction can be compatible with the view that consciousness "literally assists the brain" and "guides behavior" so that without it "our actions would be quite different." One way out of the difficulty—and I confess the only one I can think of—is the way taken by Professor Montague, namely that of restoring efficacy to consciousness by making it a form of neural energy. Something like this view indeed Professor Sellars seems often to take. "Consciousness is existentially present to that part of the cortex which is functioning, and the brain's space is its space."³⁸ That is, it is *in* the brain, as light is in the diamond or electricity in the wire. "There is no valid reason to deny that consciousness is an extended manifold. It arises in and is effective in the physical world. Its unity is that of the integrative activity of the brain which it helps to direct. Hence it is as extended as the brain is."³⁹ That Professor Sellars at times seeks to solve the difficulty of the efficiency of consciousness through the identification of consciousness with the activity of the brain—an identification which at other times he emphatically denies—is made more evident through his explicit identification of the mind with the organization of the brain⁴⁰ and his occasional implicit identification of conscious processes with mental processes. Intelligent behavior is to be accounted for by nervous processes⁴¹ since mind is a physical category. "Our view takes the sensori-motor process as a unit and holds that cortical integration of which consciousness is an element is always genetically continuous with a

³⁵ *Crit. Realism*, p. 246; *Essentials*, pp. 257-58; "Approach," p. 157; *Ev. Nat.*, pp. 289-95.

³⁶ *Essentials*, pp. 254-57; *Monist*, pp. 569-75; *Ev. Nat.*, 287-94.

³⁷ *Ev. Nat.*, p. 313.

³⁸ *Crit. Realism*, p. 244.

³⁹ *Ibid.*, p. 247. Cf. also pp. 245-49.

⁴⁰ *Ibid.*, pp. 252-53. *Ev. Nat.*, pp. 300-302, 315-16.

⁴¹ *Ev. Nat.*, p. 300.

motor pattern of the brain. In other words, cortical integrations arise in one system with motor tracts."⁴² "Psychical entities are peculiar characteristics of neural wholes and inseparable from them. . . . As soon as they are conceived as more than contents, as more than they themselves reveal, as soon as they are given *by themselves* power to do things, they become to the deceived thinker non-physical and alien to physical reality."⁴³ "The brain as mind is a more or less integrated system of propensities and interests which respond to the situation in which the individual is placed. And such interests must not be thought of as physiological in any sense that excludes discriminative appreciation. They are neurological systems whose urgencies are inclusive of mental contents. Consciousness must be connected psychophysically with neural processes of some reach. Attention itself can be understood only as a forward movement or passage in which the cerebral activity makes its path. What we must seek to do is to deepen our conception of the brain as at once activity and content. It is sensori-motor, ideomotor; it is a stream of tendencies lit up by consciousness. The brain is synthetic because it is active. It is a more or less unitary process controlled by the neuron system which is functionally uppermost."⁴⁴

I can not say I am perfectly sure what these last quotations mean. But this at least is plain to me: that if they offer a method by which the universality of naturalism can be made compatible with the efficiency of consciousness, this method consists exactly in identifying the psychical with the physical. If this identification is not intended by Professor Sellars I can not understand either how he proposes to save the efficiency of consciousness or what it is he means by interpreting propensities, interests, discriminative appreciation and attention as neurological systems or forward movements of cerebral activity.

In other words, I can not see that Professor Sellars has done anything to help materialism out of its old dilemma of being forced either to identify consciousness with the brain or to deny its efficacy. Neither of the advances he has made over his predecessors of a former generation have really made the difficulty any less real. Critical realism is of course compatible with materialism; but it is equally compatible with interaction. Nor does the existence of "higher levels" of matter in the organic world give any real assistance. For even on these higher levels, we are told, nothing can

⁴² *Ibid.*, p. 314.

⁴³ *Ev. Nat.*, p. 317.

⁴⁴ *Ibid.*, pp. 315-16.

conflict with the mechanical laws; and the new and higher laws of these levels are also of course still physical. Neither the old laws nor the new therefore can be interfered with or modified by consciousness (unless consciousness itself be physical) without wrecking naturalism and the whole materialistic scheme quite as disastrously as interaction ever threatened to do. Professor Sellars does not seem to realize that the ultimate difficulty of materialism lies not in the *kind* of physical laws which it sets in absolute control of mind and of human behavior, but in setting *any* physical laws in absolute control.

Other writers than those considered in this article might of course be added to the list of neo-materialists. But the three we have examined are typical in the sense that between them they seem to exhaust the possibilities. Professor Warren avoids the absurdity of identifying consciousness with brain but does so only by making consciousness inefficient and thereby committing himself to consequences that seem equally difficult of acceptance. Professor Montague clings to the efficiency of consciousness but only at the cost of calling consciousness a form of neural energy. Professor Sellars is unwilling to commit himself to either of these difficulties; and ends by falling a victim to both. My conclusion can only be that the new materialism has failed to bring forth a single consideration that makes the materialistic hypothesis really easier of acceptance than it was at the time when nearly every thinker gave it up, twenty years ago.

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REALISM WITHOUT MONISM OR DUALISM—II

A PREVIOUS paper discussed the nature of knowledge involving past events. The paper tried to show that the *object* of knowledge in such cases is a temporal sequence or continuum including past-present-future. While this analysis may be taken on its own merits or demerits, it was also indicated that its acceptance renders unnecessary the epistemological machinery of psychical states possessed of so-called transcendent capacity. Mr. Lovejoy's discussion in the *Essays in Critical Realism* considers, in addition, the case of anticipatory thought, judgments involving expectation, forecasts, prediction. He tries to show that in their case, at least, a mental state must be admitted, a representation which is psychical in its existence. He also questions the point in my own discussion (contained in the *Influence of Darwin, etc.*, in the essay on "The Experi-

mental Theory of Knowledge'') which claims that such anticipatory reference is involved in all knowledge.

In principle, the problem of anticipatory knowledge introduces nothing not contained in the prior discussion where reference to the future was shown to be involved in knowledge involving the past. But a discussion of the problem shifts somewhat the points of emphasis and it affords an opportunity to make explicit some of the implications of the prior discussion, with reference especially to the place of verification and of representation and ideas in a naturalistic realism which involves neither monistic nor dualistic realism. We may first consider the nature of representation.

In any judgment concerning the future or the past, there is something to which the name representation is appropriate. A present stone stands for an animal living in the past, ashes, for a fire that has died down, an odor for a flower still to be smelled, a sudden oscillation of a needle for an event still to be discovered, and so on.

Now the piece of rock, the ashes, the odor, the oscillating needle are first of all things present in experience on their own account, or noncognitively; then they may become implicated in a reflective inquiry. We may ask what they stand for or indicate, what they give witness to or are evidence of, or what they portend. In this situation and also when it is asserted that they mean or support a certain conclusion, they acquire a representative capacity which they did not inherently possess. The piece of rock is still a piece of rock but it is taken, either hypothetically or categorically according to the stage of reflection reached, as sign or evidence of something else, a fossil. It exercises a representative *function*, although it is not in its own existence a representation. Just so a poem may be not just enjoyed, but used as evidence of being written by a particular author or as an indication of a certain crisis in the life of its author; an esthetic object in its first intention is not of this sort, but it becomes such when and if it enters as a datum into a judgment about something else. Just so a board may become a sign, a column of mercury an index of temperature, a spire of smoke a clew to fire, a stain the evidence of some chemical reaction. There is a well-known rhetorical device by which a function is transferred to a thing, and we call the thing by the name of its function. Just so we call sounds or marks on paper, words; or a stone, a fossil; just so we may call things having the representation function, representations. In the first case we are not likely to forget that the term used implies a connection, not a self-possessed quality. In the second case, we too easily forget this fact and get into trouble.

This is stated somewhat dogmatically because an argument is not at issue, but rather a recapitulation of a criticized position which it is necessary to bear in mind if the force of the criticism is to be estimated. It brings us to the question of "mediatism" and "immediatism" in knowledge.¹

Mr. Lovejoy says that two opposing views of the knowledge situation may "be named 'immediatism' and 'mediatism.' According to the former, whatever kind of entity be the object of knowledge, that object must be actually given, must be itself the directly experienced datum. According to the latter view, it is of the essence of the cognitive process that it is mediate, the object being never reached directly, and, so to say, where it lives, but always through some essence or entity distinguished from it, though related to it in a special way."² To this statement he adds the acute remark that both idealists and monistic realists are immediatists. He conducts his discussion on the assumption that I am an immediatist in the sense defined and as excluding all mediatism. Then he has no difficulties in finding inconsistencies in my treatment. I should go further and say that upon this assumption everything I have written about knowledge is one huge inconsistency.

For, as the remarks about representation indicate, wherever inference or reflection comes in (and I should not call anything knowledge in a logical or intellectual sense unless it does come in), there is, clearly, mediation of an object by some other entity which points to or signifies or represents or gives witness to or evidence of. Nevertheless, thought or inference becomes knowledge in the complete sense of the word only when the indication or signifying is borne out, verified in something directly present, or immediately *experienced*—not immediately known. The object has to be "reached" eventually in order to get verification or invalidation, and when so reached, it is immediately present. Its cognitive status, however, is *mediated*; that is, the object known fulfils some specific function of representation or indication on the part of some other entity. Short of verificatory objects directly present, we have not knowledge, but inference whose content is *hypothetical*. The subject-matter of inference is a candidate or claim to knowledge requiring to have its value tested. The test is found in what is finally immediately present, which has a meaning because of prior mediation which it would not otherwise have.

There is, I think, nothing fundamentally new in this view, although it goes contrary to the more usual belief that knowledge is

¹ The immediacy of *experience* concerns one of the reserved questions.

² P. 48 of *Essays in Critical Realism*.

some kind of direct apprehension or perception of some thing or event. There is a certain sense in which Mr. Lovejoy is much more of an immediatist than I am. I mean that for him the psychical representation is but an organ or extraneous means of grasping or pointing to some entity immediately complete in itself as an object of knowledge—as was pointed out in the prior article dealing with “knowledge of the past.” While from my point of view the relation, connection or mediation of one thing by another is an essential feature of the *subject-matter* of knowledge. The conception is not, as was said, intrinsically novel. It is not inherently pragmatic. It results from carrying over into the logical theory of knowledge, the methods universally adopted at present by natural science, or inquiry into natural events. It is as appropriate to this kind of science as the assumption that the objects of knowledge are forms or essences which must be directly inspected, was to the Aristotelian science. The “pragmatic” feature comes in when it is noted that experiment or action enters to make the connection between the thing signifying and the thing signified so that inference may pass from hypothesis to knowledge. It is then seen that some “consequences,” namely those of the experiment, are an integral part of the completing or fulfilling or leading out of the “representation” into final objects.³ Thus we again arrive at a union of immediate and mediate in knowledge, instead of their sharp distinction.

These considerations appear pertinent to a discussion of the nature of intellectual anticipations, predictions, *etc.* In my essay on the “Experimental Theory of Knowledge,” I pointed out that there is an internal complication in such cases; on the one hand, there is something indubitably present, say, smoke; on the other hand, this is taken to mean something absent, say, fire. Yet it is not a case of sheer absence, such as total ignorance would imply. The fire is presented *as* absent, as intended. Its subsequent presence is required in order to fulfil the reference of the smoke. Mr. Lovejoy says that this presented-as-absent is what epistemology has always signified by “representation” (*Essays* p. 51). So far, so good, bearing in mind what has been said about the meaning of representation. But Mr. Lovejoy introduces a further qualification. I had said that in order to fulfil the meaning of what is given-as-present, the given-as-absent must become present, and this involves an opera-

³ Confusion arises sometimes, I think, because Mr. James accepted an “immediate” knowledge, “acquaintance,” and applied the conception of transitive leading only to “knowledge about.” In the latter he did not emphasize the experimental production of consequences, although he did not deny it. Hence follows the importance of discriminating varieties of pragmatism in discussing theories of knowledge.

tion which tries to bring the inferred fire into experience in the same immediate way in which the smoke is present. Mr. Lovejoy denies the need of any operation or act. He says that we may dream of a windfall of fortune about which one can do nothing. Of course one can, just as one may construct day-dreams without end. But are these thoughts, in any cognitive sense, of the future, or are they just fancies whose function—so far as they have any—is esthetic enrichment of the present moment? He also denies the necessity of an act to bring the meant object into actual experience on the ground that the thing present, smoke, may merely remind us of a past object; it may merely beget a reminiscence (p. 53). I should not think of denying this fact. The claims of my theory begin when we ask what is the cognitive status of this reminder or reminiscence. I may be reminded of something beautiful which I have read in a poem. Does this make the reminder knowledge? Does it give the smoke or the poem a place in some existential landscape? Does it even depend upon my being able to place the poem with respect to its author, the book where I read it or the time when it was read? What my theory is after is precisely the differentia between a reminder or reminiscence which is esthetic and one which is cognitive or a reminder of *fact*. My theory involves no slurring over of the existence of reminders. It claims that when we take them *as* knowledge we proceed to act upon them, and that the consequences of the acting test the validity of the claim of a recollection to be true knowledge. Mr. Lovejoy may hold that every dream and every reminder is a case of knowledge. But I do not see how he can attribute the implications of that doctrine to a theory which holds that some experienced objects are self-enclosed esthetically, and therefore lack cognitive status. Moreover, his inference that my theory is false, since we do not act upon a dream, may appear to some to throw doubt upon the theory that a dream is a case of knowledge rather than upon *my* theory.

In discussing my criticism of monistic realism, Mr. Lovejoy has no difficulty in finding numerous passages which indicate that I am not a monistic realist. Considering that I was criticizing monistic realism for its monism, his discovery does not surprise me. The converse discovery would have given me a shock. Mr. Lovejoy then argues that if I am not a monistic realist I must be a dualistic one. "That, then, is the alternative to which he [the present writer] is limited—*either* idealism or else dualism. . . . A conception of knowledge which should be at once realistic and monistic is barred to him" (*E. C. R.*, p. 62). Mr. Lovejoy appears fond of the use of the principle of excluded middle. But this principle is two-

edged as well as sharp. Unless handled carefully, it cuts the fingers of the one who uses it. We have already noted how Mr. Lovejoy makes an exhaustive disjunction between the immediate and the mediate in knowledge on the basis of which he convicts me of inconsistency. We have also noted that the gist of my theory about the object of knowledge is that it is mediate in one *respect* and immediate in *another*, so that the alleged inconsistency is due to failure to grasp the theory. Neither is the disjunction between monistic and dualistic realism exhaustive. There remains pluralistic realism, which is precisely the theory I have advanced. The things which are taken as meaning or intending other things are indefinitely diversified, and so are the things meant. Smoke stands for fire, an odor for a rose, different odors for many different things, mercury for atmospheric pressure or heat, a stain for a biochemical process, and so on *ad infinitum*. Things are things, not mental states. Hence the realism. But the things are indefinitely many. Hence the pluralism. It all hangs together with the hypothesis which has been outlined concerning the nature of knowledge.⁴

Mr. Lovejoy, however, has another shot in his locker. Since I admit that in anticipatory inference—in all reflection from my point of view—something is present-in-experience-as-absent and as-to-be-brought-into-presence-of-a-direct-kind, he holds that I have admitted the psychical or mental as a term in the judging process, and hence am committed to dualism. His dialectical argument in support of this view appears to manifest another instance of addiction to uncritical use of the principle of excluded middle. Present-as-absent, or the presence of the absent, is an impossibility as regards any physical thing. Hence there is an admission of a psychical entity. For, he says, the adjectives mental and psychical as he uses them “simply designate anything which is an undubitable bit of experience, but [which] either can not be described in physical terms or can not be located in the single objective or ‘public’ spatial system, free from self-contradictory attributes, to which the objects dealt with by physical science belong” (*E. C. R.*, p. 61).

This assumption of an exhaustive disjunction between the physical and psychical is significant. It disposes, by a single sweeping gesture, of the growing number of persons, not pragmatists, who

⁴ There is nothing original on my part in this view. It is held by some whose realistic standing is probably less open to suspicion than is mine, Professor Woodbridge for example. See his “Nature of Consciousness,” this JOURNAL, Vol. II, p. 119. He has drawn some inferences from this conception which I have found myself unable to accept, and I have drawn some which I fear do not command his assent. But I am glad to acknowledge indebtedness to him for much clarification of my own thought on the subject.

hold that certain entities are neutral to the distinction of psychical and physical. It asserts, by implication, that all meanings, relations, activity systems, functions, affairs like mathematical entities, like a constitution, a franchise, values, operations, conceptions, norms, *etc.*, are psychical. Such a position is peculiarly striking in the context of a volume which makes constant use of the notion of essence. Mr. Lovejoy, himself, refers on the very page from which the passage is quoted to "a common character or essence" found in the thing representing and the thing represented.

From the standpoint of argument, I am entitled, I think, to leave the matter here, till Mr. Lovejoy and his collaborators have wrestled with the question of essence in its bearing upon the exhaustiveness of the disjunction between the physical and the psychical, and till many non-pragmatists have been disposed of. The situation certainly puts the burden of proof upon Mr. Lovejoy. But it is better to take advantage of this opportunity to make a brief restatement of my own view as to the nature of "ideas" or the mental. Mr. Lovejoy starts with a ready-made psychical existence which assumes the function of reference or of signifying, and that the future thing which is presented as absent is, itself, psychical, or if not in itself, at least in its presence-as-absent. My hypothesis reverses the notion. It starts with a thing, *res*, actually present, smoke, rock, and with the present fact that this something refers to something else of the same order of existence as itself, a fire, or geologic animal. It bases itself upon the undoubted occurrence of inference from one present thing to another absent thing of the same non-psychical kind. It thus avoids the breach of continuity, the dualism, involved in dividing existence into two orders, physical and psychical, which are defined only by antithetical attributes, and of such a nature that reference and intercourse between them is an affair totally unlike any other known matter. It also has the advantage of starting from a *vera causa*, the undubitable fact of inference.⁵

According to hypothesis, then, the future thing meant is objective—a fire, possibility of finding additional traces of extinct organisms, a rain storm, penalization of certain modes of behavior, or an eclipse of the sun. It is stood for or represented by something equally objective, mathematical figures, words, heard or seen things, *etc.* That one objective affair should have the power of standing for, meaning, another is the wonder, a wonder which as I see it, is to be accepted just as the occurrence in the world of any other quali-

⁵ *Essays in Experimental Logic*, p. 225.

tative affair, the qualities of water, for example.⁶ But a thing which has or exercises the quality of being a surrogate of some absent thing is so distinctive, so unique, that it needs a distinctive name. *As exercising the function we may call it mental.* Neither the thing meant nor the thing signifying is mental. Nor is meaning itself mental in any psychical, dualistic, existential sense. Traditional dualism takes the undoubted logical duality, or division of labor, between data and meanings, and gets into the epistemological predicament by transforming it into an *existential dualism*, a separation of two radically diverse orders of being.⁷ Starting from the undoubted existence of inference, or from a logical function, "ideas" denote problematic objects so far as they are signified by present things and are capable of logical manipulation. A probable rain storm, as indicated to us by the look of the clouds or the barometer, gets embodied in a word or some other present thing and hence can be treated *for certain purposes* just as an actual rain storm would be treated. We may then term it a mental entity. Such a theory, it will be noted, explains the mental on the basis of a logical function. It does not start by shoving something psychical under a logical operation.⁸

The matter is so important that perhaps it is worth while to try to state it in another way. Meanings are the characteristic things in intellectual experience. They are the heart of every logical function. They are not physical nor are they (pace Mr. Lovejoy's disjunction) psychical.⁹ A meaning is not necessarily such that it can be called an idea or thought. But a meaning may be adopted hypothetically, as a basis for instituting inquiries, or as a point of departure in connection with other meanings for reasoning, an experiment in combining meanings together to see what develops. Such a tentative acceptance of meanings is all that is possible in a problematic situation, unless we make either a dogmatic assertion or a dogmatic denial. What is the meaning of some event? What is it all about? Something suggests itself as a possible answer or solution. It is as yet,

⁶ That is to say, it is a metaphysical or cosmological or scientific question—as the case may be—which effects all schools of epistemological thought alike. It is not a problem which bears more heavily on one than on another, though on the face of it there are more difficulties for a dualistic school than for others because of the implied breach of continuity.

⁷ This point has been developed, not to say labored, in the essay entitled "Data and Meanings" in the *Essays in Experimental Logic*, pp. 136–156.

⁸ See the essay on the "Logical Character of Ideas," pp. 220–229 of *E. E. L.*

⁹ Of course upon my theory they are, existentially speaking, the *operations* involved in any situation having cognitive reference.

however, only a possible, a conjectural meaning. How is it to pass beyond conjecture and be definitely asserted or rejected? Inquiry proceeds by taking a stand, as it were, upon the meaning and using it as a base for new observations and reasonings. *If* so and so, *then* so and so. We look to see if the "then so and so" can be actually presented in experience. In the degree in which we can thus find what is hypothetically demanded and can determine that *only* the "if so and so" implies it, we make assertion categorical. Such is the course of any legitimate reflection. But the operation demands that the meaning be embodied in existence, that it be a "concretion in discourse" to borrow Mr. Santayana's apt term. The usual method is a word or diagram, but in any case, there must be some physical thing to carry the meaning, if the latter is to be employed for intellectual manipulation and experimentation, or as an effective hypothesis. The hypothetical meaning thus embodied constitutes *a* thought or *an* idea, *a* representation.

This is the theory which I have put forth.¹⁰ The theory is, of course, conceivably incorrect. But if so, it is incorrect because of matters of fact. It is not arbitrary nor paradoxical, and while it is obviously inconsistent with presentative dualism or transcendent immediatism it does not appear to be inconsistent with itself when it is taken in its own terms.

I close with a general remark on the main point at issue, the question of the method appropriate to investigation of the problem of knowledge. This, rather than "pragmatism," is the point at issue. Professor Rogers, in his contribution to *Essays in Critical Realism*, has stated the matter in such a way as to define the issue. He says "that the quarrel between the critical realist and the pragmatist is due, primarily, to the fact that they are not dealing with the same problem. Professor Dewey's concern is with the technique of the actual advance of knowledge in the concrete—its linear dimension in relation to other knowledge past and future, as this enters into the texture of conduct. The critical realist, on the contrary, is interested in its dimension of depth—its ability to present to man's mind a faithful report of the true nature of the world in which he has to act and live" (p. 160).

I am grateful to Professor Rogers for putting the case so clearly from his point of view. It marks a genuine advance in fruitful discussion. It gives me an opportunity to say that from my own standpoint the quarrel is not due to the fact that we are discussing different problems. We are discussing the same problem. The

¹⁰ See, in addition to references already given, pp. 430-433 of *Essays in Experimental Logic*.

difference concerns the method by which the problem is to be approached and dealt with. The objection is to the epistemological method as distinct from a method which accepts logical procedure as a fact and then tries to analyze it. My contention is that the problem of a faithful report of the world in which we have to act and live can be fruitfully approached only by means of an inquiry into the concrete procedure by which actual knowledge is secured and furthered. In most matters, we have painfully learned that the way to arrive at a sound generalization is by examination and analysis of specific, concrete cases. Why not apply this lesson of scientific procedure to the problem of reaching a conception of knowledge, to the problem of the nature of a faithful report of the world? If we do enforce this lesson, the disjunction between the critical realist's problem and the "pragmatist's" problem, as stated by Mr. Rogers, vanishes.

What does "faithful" denote and signify? What does "report" denote and signify? And, more important still, by what method shall we seek an answer to these questions? Mr. Pratt in his contribution quotes a saying of Mr. Santayana's that "an opinion is true if what it is talking about is constituted as the opinion asserts it to be constituted" (p. 99 of *E. C. R.*). With all my heart; assent can not be too unqualified. But is the statement a solution or does it contain the gist of a problem? What is an opinion, existentially speaking, and what does it mean? And so of the terms "talking about," "assert," and so of the connection between the talking about and the "what" talked about, implied in the term "as." These are things to be investigated if we are to reach a satisfactory conclusion concerning the nature of a faithful report. And I see no way to answer them except to adopt the same procedure which we employ in investigating other subject-matters: analyze special cases of knowledge secured and advanced, and generalize the outcome of the analysis. My objection to the epistemological method is that it ignores the only method which has proved fruitful in other cases of inquiry; that it does so because it accepts, uncritically, an old and outworn psychological tradition about psychical states, sensations and ideas,¹¹ and because, in so doing, it states the problem in a way which makes it insoluble save by the introduction of a mysterious transcendence plus a naïve confidence in irresistible propensities and unescapable assumptions. And when it comes to any particular case of alleged knowledge we find the epistemologists abandoning their epistemological machinery and falling back upon the logical procedure ac-

¹¹ See an article in this JOURNAL, Vol. XI, p. 505.

tually employed in critical investigations which terminate in experimental verifications. Why not begin, then, at this point?

We are trying to know knowledge. The implication assuredly is that there is knowledge. The procedure which I have tried to follow, no matter with what obscurity and confusion, is to begin with cases of knowledge and to analyze them to discover why and how they are knowledges. If this procedure can be successfully undertaken, then we can tell what knowledge is. What other method is reasonable? We are trying, be it remembered, to know knowledge, to get at and formulate its character. What is the likelihood of success in the undertaking if we rule out specific cases of knowledge and try to investigate knowledge at large? If we have no case of knowledge upon which to go, and upon which to base judgments as to the value of a proffered knowledge of knowledge, what meaning has the term knowledge? Why not call it abracadabra, or splish-splosh, or anything else that comes into your head? How does knowledge, at the best, mean something different from poesy or fancy or dreams? For my part if we wish to know what a faithful report of the world in which we live means, I prefer to take the best authenticated cases of faithful reports which are available, compare them with the sufficiently numerous cases of reports ascertained to be unfaithful and doubtful, and see what we find. Starting in this way, we have a method by which we can also discriminate and identify poesy, reverie, dreams, sensations, ideas, hypotheses, data, and all the rest of it. The principle of parsimony has claims which all tell in behalf of the use of the logical method.

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BOOK REVIEWS

The Absolute Relations of Time and Space. ALFRED A. ROBB. Cambridge University Press. 1921. Pp. viii + 80.

This little book is a simplified summary of the author's earlier work, *A Theory of Time and Space*. It amounts, I should say, to a restatement of the special theory of relativity, in which an attempt is made, first, to avoid paradox as far as possible, and secondly, to reduce all the geometrical concepts involved to a single undefined relation. In the former respect, the success of the work may be doubted; in the latter respect its success is altogether brilliant.

Mr. Robb is one of those who has revolted against the notion that what is the earlier of two events for one observer can be—and not

merely seem to be—the later of the two for another observer. This seems to him to make the relation of before and after merely subjective, whereas science requires that it be objective. The objection appears to me to be unsound, for it leaves out of account the fact that the difference in the temporal relations of the two observers is supposed, according to the theory criticized, to have a perfectly definite objective basis. And, on examination, the difference between Einstein and our author shows itself to be merely verbal. All the complexity of multitudinous time-systems which Einstein recognizes appears again here under the veil of a new terminology.

Mr. Robb's starting-point is the assumption that for an event A to be earlier than an event B , it must be possible for A to be among the causal antecedents of B ; that is to say, it must be possible for a physical influence starting from A to reach the place of B not later than B . If now we suppose that there is a maximum speed with which energy can be transmitted—the velocity of light—and if we compare events at two different points in space, there will be at either point a time-interval within which the events will be neither earlier nor later than a given instantaneous event at the other point. As the distance increases, the time-interval increases also. The whole period of the Great War may be neither earlier nor later than a given event on Sirius. Contrariwise, as what we may call the "neutral interval" varies, the distance must vary. Thus spatio-temporal relations exhibit a sort of "conical order." Now it is only when, according to Einstein, A precedes B in *all* time-systems, that, according to Mr. Robb, A is said to precede B . Thus a certain amount of paradox is avoided. But an equal paradox is substituted. We are not to speak of the *same* instant as occurring throughout the universe. Each instant is restricted to a certain point of space. Is anything gained for science or common sense?

But if Mr. Robb's terminology is not less paradoxical than Einstein's, it is equally legitimate; and it leads to the brilliant piece of logical analysis which I have mentioned. The fact that each time-interval is correlative with a certain distance enables Mr. Robb to provide a set of definitions of geometrical concepts in terms of the relations of before and after. In Mr. Robb's own words, "*spatial relations are to be regarded as the manifestation of the fact that the elements of time form a system in conical order.*" It is not easy to do justice to the ingenuity with which this analysis is conceived; and it is safe to say that the subject is given a clearing-up which no other mode of treatment could well surpass.

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JOURNALS AND NEW BOOKS

THE AMERICAN JOURNAL OF PSYCHOLOGY. January, 1922. *Instinct and Value* (pp. 1-18): HENRY C. LINK.—The mechanistic, pseudo-scientific and popular definitions of instinct are presented with the conclusion that as long as the present vague and varied notions prevail, no definite conclusions can be drawn as to their relation to value and that when instincts are defined more accurately and carefully more accurate correlations between them and values will be possible. *The Psychology of Reflex Action* (pp. 19-42): J. R. KANTOR.—Reflexes can best be understood when considered as psychological acts rather than physiological acts. This gives them their place in the adaptations of the organism. *Functional Psychology and the Psychology of Act: II* (pp. 43-83): E. B. TITCHENER.—The discussion begins with an analysis of Brentano's works and the criticisms of Meinong, Husserl and Münsterberg. They agree that consciousness is "intentional." This intentional psychology is closely affiliated to philosophy and education. *Affirmation and Negation* (pp. 84-96): C. H. GRIFITTS.—This experimental study shows that affirmative instructions can be more easily and quickly followed. This indicates that negation is a different neurological process from affirmation. *Comparative Cognitive Reaction-Time with Lights of Different Spectral Character and at Different Intensities of Illumination* (pp. 97-112): MARTHA ELLIOTT.—Reaction times vary directly with intensity with maximum efficiency between 10 foot-candles and 20 foot-candles. *The Miracle Man of New Orleans* (pp. 113-120): JOHN M. FLETCHER.—This miracle man attracted great crowds but the public soon lost confidence in his ability. In the realm of mental diseases indefensible practices such as represented in this case still flourish. *An Experimental Study of the Perception of Oiliness* (pp. 121-127): LILLIAN WEST COBBEY AND ALICE HELEN SULLIVAN.—Oiliness is a fusion of warmth and light pressure. *Minor Studies from the Psychological Laboratory of Cornell University. LV. Cutaneous Localization and the "Attribute of Order"* (pp. 128-134): H. M. LUFKIN.—The study suggests that localization is in general a matter of perception rather than sensation. LVI. *On the Non-Visual Perception of the Length of Vertically Whipped Rods* (pp. 135-139): ERNA SHULTS.—The perception of length depends upon the relative intensity of two opposed pressure experiences in the hand. LVII. *On the Non-Visual perception of the Length of Horizontally Whipped Rods* (pp. 139-144): A. S. BAKER.—The perception of the length horizontally whipped rods is more accurate than that for vertically whipped rods. This perception depends on the experience of op-

posed pressures. *Reviews of Books.* Oswald Kuelpe, *Vorlesungen über Psychologie*: R. M. OGDEN. Charles Baudouin, *Suggestion and Autosuggestion*: MARGARET FLOY WASHBURN. Wilhelm Wundt, *Elements of Folk Psychology*: E. B. T. Wesley Raymond Wells, *The Biological Foundations of Belief*: L. B. HOISINGTON. L. A. Averill, *Psychology for Normal Schools*: H. G. BISHOP. *Notes.* Benno Erdmann: RAYMOND DODGE. Festschrift for Carl Stumpf: E. B. T. The Edinburgh Meeting of the British Association. H. S. LANGFELD.

Sortais, Gaston. *La Philosophie moderne depuis Bacon jusqu'à Leibniz.* Vol. II. Paris: P. Lethielleux. 1922. Pp. 584. 20 fr.

Poyer, Georges. *Les Problèmes généraux de l'Hérédité psychologique.* Paris: Félix Alcan. 1921. Pp. 302. 15 fr.

Baudin, E. *Psychologie.* Third edition. Paris: J. de Gigord. 1921. Pp. 630.

NOTES AND NEWS

A correspondent has sent us the following questions, which formed part of an examination given in 1893 to prospective teachers of Ohio:

1. Name the three primary divisions of the mind and give an outline (divisions and subdivisions) of the first division.
2. Distinguish between soul and spirit and show how the former controls, influences, and wields the body.
3. What is consciousness? Show in how many ways it is exercised.

Dr. Charles E. Cory has been promoted from associate professor to professor of philosophy at Washington University, St. Louis.

THE JOURNAL OF PHILOSOPHY

THE DICHOTOMY OF NATURE

ONE of the oldest ways of construing the universe is to see it made up by pairs of opposites. Matter and motion, good and evil, art and science, structure and function, life and the non-living, are obvious couples of this sort; the list can be extended almost indefinitely without going far from common sense. If it is the custom of modern philosophy to make little of these dualities, let us remember that years of epistemological controversy, training the devotee to the very pink of specialization and sophistication, have doubtless atrophied the power of seeing the obvious or of appreciating the significant. Philosophers of the past, indeed, have noted them often enough. The Pythagoreans are said to have arranged the universe on such a pattern, and Heraclitus found in opposition the genesis of reality. Plato's fundamental dualism, and the Aristotelian act and potency, applied unwaveringly by the scholastics, continued the tradition. In the *coincidentia oppositorum* of Nicolaus Cusanus, the old tendency reappears, and in the first period of modern philosophy the duality of mind-body was the bone of contention. Unfortunately, the philosopher's attention was soon turned into the narrow channel of the problem of knowledge and the study of reality languished. But eventually Hegel, whose merit lay in his profoundly objective interest, brought philosophy back to the normal point of view by presenting a map of the universe built out of pairs in an ascending scale. Yet because he made certain mistakes in his classification, his successors have tended to view askance the two-fold habit of nature which he dwelt upon; whereby they have lost a deal of empirical truth. At any rate, it seems clear that this trait of reality, so frequently noticed, so ubiquitous, so momentous in human concerns, is likely to possess high metaphysical significance. Let us then set forth a list of the pairs which we find in the universe, and examine their meaning and connections. We shall find that they display a striking unity of plan, and one which, I venture to think, furnishes the key to some old mysteries.

We begin with a few cautions. The categories that follow are to be taken as matrices rather than polished gems; thought may carve them into sharp-edged concepts, yet in reality a category is (to vary the figure) a bright spot with luminous rays extending to other

bright spots, though not equally in all directions, and perhaps in some falling quite short. It need not be cut off clean from the rest, to be real for itself. Nor shall we proceed at once to the other extreme and declare that all categories are but abstractions from a continuous manifold. If they are in any sense abstract, it is nature and not man that does the abstracting; at least in many cases we shall find this to be so. And we use "category" here in a very general sense, to mean a habit of nature frequent enough to seem metaphysically important. We do not refuse, as Mr. Alexander does, to call *quality* a category. Technical accuracy, requisite indeed for some purposes, is not our present aim. One can point out a tree in the landscape, and discourse truthfully and significantly about it, without rule or compass; and perhaps the same is true, *mutatis mutandis*, of metaphysical discourse. And finally, it is perhaps well to say that we are not attempting to deduce the categories from some beginning; we do but expound a plan which nature seems to offer, and of which we are the passive spectators.

The first pair is that of things and relations between them. We place it first because this is the simplest, vaguest, and widest-spread of reality's characters. To the awakening consciousness, it may well have been the earliest datum, even though then meaning hardly more than vague shocks or bumps and the distinction of them. At any rate, many separate beings are presented—that is the first object upon which thought can exercise itself. But we are not now concerned with genetic order; rather with the objective and primarily the material world. Early man was doubtless more aware of such a datum at night; for at night he had opportunity to contemplate, and he saw the manifold of lights arranged in the heavens. But by day the same couple was offered to him by impinging objects, by the resistance or non-resistance of the environment. Nor have we of to-day been able to do without these categories, though reflection has taught us to call them, in the conceptual domain, term and relation, and in the physical universe, real substantial things or material objects and their arrangements. For the category of substance is embedded in this category of real things; objects in the external world come to us as real in and for themselves, present actualities with a subsistence of their own here and now, no matter what may appear at some later time. We may have to revise our interpretation of them, but the revision must be fair to the present appearance; this appearance has a natural right, as every man has a natural right to live. It may turn out to be illusory—so we later learn—but illusions have objective grounds. There is something out there; there are many somethings, indeed, and they are in some sort of order. They have a

solidity and a fastness which we designate by the word *substance*. Substance connotes that self-sufficiency and stability which is the essence of being. Man's primary discovery is that there are substances or beings and that they have relations. These two are the fixed hooks on which all subsequent information is hung; metaphysics starts from them and returns to them.

Of this primitive and ultimate pair, the first was more emphasized in olden time, while the second is having its turn to-day, and somewhat to the exclusion of its mate. The turn came to self-consciousness in E. Cassirer's *Substanz-theorie und Funktions-theorie*; but that side of the wheel has been long in view. Modern philosophy began with the two Cartesian substances, but matter at once evaporated into space, and mind was hardly more than thoughts. With Spinoza, substance retired into the infinite distance; in Leibniz, it was replaced by force. If Locke still dallied with common sense, Hume offended it beyond possible reconciliation by his reduction of matter to its effect upon mind, and of mind to a series of ideas. For some centuries now, mathematics has been the philosophic ideal, and mathematics knows no substance. To-day, the mathematical approach to the philosophy of nature has usurped the place of favor, and none may enter the field who can not say much in symbolic form. But even among the non-mathematical, is not the relational bias evident? The pragmatic tendency is to define things by their consequences, to interpret all by the context, to deny self-sufficiency everywhere. The Bergsonian system views the temporal relation as the very stuff of life. The speculative idealist finds the pathway to reality in the interdependence of all things, rather than in the things themselves; finite personality, soul-substance, and material stuff live only in their mutual connections and relations. And is it not the relations between men, rather than the individual man, that command our attention in what is called the "social problem"? We no longer think of the individual as a character existing in and for himself, but as one having his whole being in the relations he bears towards his fellows. Our modern philosophy and our modern way of thought, whether monism, or pragmatism, or intuitionism, is always relationism.

But a relation without terms is meaningless; and a philosophy which has forgotten the category of substance can not, in the end, give an intelligent account of reality. However refined its analyses, however imposing its array of proofs and its logical technique, it becomes no more than a science of the possible, a formalism dissociated from the real world. In spite of our respect for their logical attainments, it is hard for us to repress the feeling that the work

of Messrs. Russell, Whitehead, Broad and Alexander commits the old fallacy of deriving the individual from the universal, real things from their connections, matter from the union of space and time, terms from their relations. We suspect that under these leaders philosophy is in danger of becoming a sophisticated cult, and that we must go about on the other tack, paying respect to the empirical deliverances of science, to the kinds of substance it shows us, to the structure of the atom, the constitution of the cell, and the order of the sidereal system. For science deals first and last with real and separate things, with electrons which have permanent volumes, and mechanical masses that resist impact. If some of these were destroyed, presumably the others would remain; even though their behavior might be altered, their reality would be undiminished, and thereby their substantiality vindicated. Philosophy, after all, can not afford to cut itself quite loose from common sense. Common sense is not a sufficient condition of philosophy, but it is a necessary one. The statesman, however far-seeing his vision, can not well neglect public opinion, though public opinion is far from being a sufficient guide; and philosophy, likewise, must defer to the common belief in substances. Herein we have something to learn from the scholastics, who were able to combine extreme nicety of definition with regard for the categories of the practical man—these being the categories of common sense. We must frankly acknowledge that not even the most impressive massing of scientific technicalities, or the most brilliant literary style, can make motion without things that move, or time without things that change, any less meaningless than they ever were. Indeed, the modern preference for relation over substance would hardly have become so influential, were it not for our dislike of anything hidden. We wish all reality to be laid out in the open, in this age of publicity; whereas a substance is full of potencies not yet revealed, and contains reserves and private property not sharable. But here, too, we take leave alike of common sense and of scientific practise, since we have to admit the hidden and latent in persons, and since science can not do without potential energy.

Substances and relations are themselves given as many. In fact, each of these two is found to contain a dichotomy; for each contains two chief divisions, and each of these again two, and so on. This description, we shall immediately try to show, holds of our world as now presented to us; but also it may be sound chronology. It seems not unlikely that the physical universe began thus. Scientists have pictured a vague nebula with lumps, hardening into bodies with empty space between them, and eventually providing the present manifold universe. Always, to be sure, there were substance and

relations, spatial and temporal, as well as some degree of differentiation in the nebulous mass. A quite undifferentiated unity we are not asked to accept. Being must, apparently, have started (if it ever did start) with something of the duality of thing and relation. But our present purpose is not chronological; we wish rather to set forth the present dichotomy of nature, without regard to its genesis. And we find it to be of the following Porphyroid character, which we first state roughly and then go on to examine in more detail. Relations comprise two sorts, space and time; space comprises qualities and quantities. Out of the material thus provided we discover by analysis, identity and diversity, individual and class, ordinal and cardinal number, intensive and extensive quantity, velocity and mass, and endless derivatives of these; and in another aspect, act and potency, cause and chance. These categories make up the main tale of the formal side of the world. They constitute the subject-matter (not, properly speaking, the object-matter) of science. The object-matter, which our modern philosophy has all but overlooked, is found in the dichotomy of the other initial category, thing or substance. Things are found to comprise two sorts, living and non-living. The latter group contains mechanical and electrical phenomena, and electrical phenomena are of two kinds, positive and negative. Living beings, taken *en masse*, are either plant or animal; plants are divided into two great lines, the green plants and the bacteria, while animal evolution culminates in the two main divisions of arthropod and vertebrate. In the former division, as Bergson and others have pointed out, instinct is the chief guide of behavior; in the latter, intelligence. Herewith we are introduced to the fundamental cleavage of mind and body, and a long chain of couples in the region of mind—fact and value, theory and practise, art and science, and so on. On the other hand, if we consider the individual living being, we find the primary distinction within the cell, of nucleus and cytoplasm; reproduction by the process of bipartition; and early in the history of the metazoa and metaphyta, the distinction of sex—a distinction which in the highest vertebrate has become so significant as to color almost the whole of his life. Let this statement, rough as it is, and even inaccurate in certain details, suffice as an indication of our plan.

Now, of course, the universe may be classified from many points of view; and superficially one way may seem as good as another. Yet on the whole, the dichotomic plan can hardly be called arbitrary. The distinctions are in many, if not all, cases easy and objective; they are also fundamental, and have been reached or confirmed by centuries of scientific inquiry. Some there are who declare that the

scheme is anthropomorphic, due perhaps to the unsuspected influence of man's bilateral symmetry, or even his interest in sex; but it is not likely that the distinction between positive and negative electricity, or between time and space, or animals and plants, or nucleus and cytoplasm, has such an origin. Nothing is more objective than these; they are clearly distinct and they clearly belong together. It may be that the couples in the field of mind—art and science, value and fact, good and bad, *etc.*—have a subjective source in man's bilateral symmetry; even so, this symmetry is a physical fact, common to vast numbers of organisms and deserving a place with other fundamental dualities. We propose, then, to follow the clew, studying in turn the couples above named, and their logical relations in structure and function.

And first, how are substance and relation related? In three ways: they are complementary, *i.e.*, they hang together in a certain way, they are opposites, and they form an asymmetrical pair.

Substance means a solid real thing which impresses us; of the senses, it is most clearly given to touch. Touch is, of all our experiences, the special witness of reality, as when we test an hallucination by prodding it. The scientist, treating inertia as matter's fundamental attribute, takes his cue from touch, since touch is the sense of resistance, which is all that inertia means. But form and arrangement, while real enough, are more subject to illusion and less authoritative in their own right. Eye and ear, the organs devoted to these categories, are not the last court of appeal like touch, and correspondingly, substance has more of reality about it than relation. Substance is in this manner prior to form. If neither has much meaning without the other, that fact is not true of each in the same sense or degree. While we know no substance, perhaps, that is not in a manifold, such a thing is conceivable. We may imagine one bright star in a dark space as the sole content of the visual field; a term with almost no relation, or with relation only of distinction from the nothingness about it. But we can hardly conceive a relation without terms: that, indeed, seems, as noted above, a true case of what idealists call a vicious abstraction. If, then, relation and terms hang together, the latter do more of the supporting; and the mistake of idealists has been to be so prepossessed with the connection of these as to overlook their difference. The relation between them is not the same in its two directions; they are an asymmetrical couple. And we might have seen this by analysis, also. Relation is but carrying away from the present real thing to another, and you can not carry without a burden; which burden here is being. But thing or substance is, as immediate experience, to a degree self-contained, and

needs nothing to support it. Thus, relations need terms, and imply them, while a term makes relation possible but does not absolutely imply it. We may add that the notion of a relationless term has hovered over the philosophic arena ever since Parmenides; notably in the Thomistic God and the idealistic Absolute, to say nothing in detail of the mystics.

But the two prime categories are also opposites. Relation, in the most general meaning, is opposed to thing, because it carries us away to another, as motion is the opposite of rest. But it is not opposed in the contradictory way; this transition is not a denial but an ignoring. It is like attention, which, selecting one and rejecting another, negates without denying that other; there is no contradiction in the process. Indeed, to negate one thing without denying it, *is* to present another. Otherness is the original of negation, while contradiction is negation perverted and sinful. And so relation is that sort of negation which does not transgress the law of contradiction. If a substantial thing is position without contradiction, relation is opposition without contradiction.

Thus far, then, we have substance and relation, and the connection between them, which is that (1) they hang together in a rather free way, (2) one is prior to the other, and (3) they are non-contradictory opposites.

The second member, relation, is a very vague affair. As man becomes acquainted with his external world, two kinds of relation disengage themselves; relations of co-existence and sequence. These are given to sense, though not to the same sense. Space is given chiefly to vision, as substance to touch, and time preëminently to hearing. For vision is not directly, though it is indirectly, of bodies or resisting things; touch has spatial qualities, as bodies are in space, but vision is concerned primarily with extended things. Touch is also, in a way, intenser than vision, as substance is more real than relation. Vision, even of the most violent sort, as of the sun, does not shock the organism to the degree of the gentlest blow. It is impossible to see objects without seeing them extended or seeing some distance between them. And though we see processes and thereby time, we may also see a still panorama, which, for a few seconds at least, gives to vision no inkling of temporal quality. Hearing, however, is never without that quality; as it gives no spread-out content which so absorbs attention as to exclude the awareness of change. There is more discreteness in hearing than in vision, and discreteness, as we shall see, is a peculiarity of time. We are here talking of objective space and time which science uses, mathematics analyzes, and man more or less perfectly apprehends in vision and

hearing. We neglect the distinctions between conceptual, perceptual, visual and tactual space, and between perceived, remembered and scientific time.

Space and time hang together. Most of the real things in our material world are in motion; substances occupy space and change their occupation in time. So we are accustomed to say that each category involves the other. But if no more be said, the account is misleading. They involve each other in different ways, and the implication is not always binding in the same degree. Time might occur in a single substance—as if a star, with no fellows, might go through a change of color. Space is here involved, yet not in the sense of a positive condition with properties of its own—positions, distances, *etc.* Various real things must be given to afford such space; and time alone, of itself, does not imply such variety of coexistence. Time no more involves coexistence than one real thing involves others. Thereby time is more like its father, substance, whereas space will be seen more to resemble its mother, relation. There is a certain possibility of independence about time; though this is not actual, for really the world is a manifold. That being so, we find the two interwoven. Yet there is a difference; time is nothing without events or change, as a relation is nothing without terms; and therefore there is no empty time. Time is relative to events, or contents, and must, in the end, be estimated by the number of events that occur. Eventless or empty time is a paradox, and time therefore actually is interpenetrated by things; whereas empty space, or space without time, seems not so absurd. There may be empty volumes; there may be no ether. In fact, if there is no ether, probably *most* of space is empty; the distances between atoms are far greater than the extent of each atom, and there may be places through which electrons never actually pass. There may also be, beyond the Milky Way, an infinite volume of empty space in every direction. But is not empty space then a relation without terms? Rather it is the nearest approach we find in nature, to a relation without terms. It is not quite without its *relata*, but these *relata* are not in the first instance things, but positions. Now a position is not definable without reference to a body; it is given to sense as occupied by a body, and to thought as capable of occupation even when not occupied. So space, which is made of positions, is relative to body, though not always to actual bodies. But it is relative in a peculiar way, which shows us that even relations may have a semi-substantial character. Spatial relations are presented directly; we see the stretch between two bodies and the area of a body; we even see pure positions without magnitude. Relations are as much data as

things or qualities; and so are points. In the matter of points we have been enslaved by mathematism, which declares them to be the result of analysis, the limit of a series. But we should never get the notion of that limit from the series itself, as it is beyond the series; all limits are independent of their series and must be given directly and independently, to be known. Points, however, are given to experience when we see a *minimum visibile* which *appears* to have no extension. That the physical object thus seen turns out to be fairly large does not alter the character of our sight of the object. We know just how a true point would look if we could see it, as we know by a photograph just how a certain man would look if we could see him. A point is not merely a conceptual limit but a sense-datum, though revealed to us in an illusion. The same is true of a straight line. We see what looks like a line and straight, and were it not for that datum we should never frame the notion of a line as the limit of a narrowing plane. All these spatial entities are given in one way or another, though given as potencies or capacities, while yet real. Space could not wholly break away from matter or things, but it comes just as near as it can to that condition; empty space is the image of presented nothingness; the way nothingness would look if we could see it. Thereby, it is wrong to derive the concept of nothing from not-this, not-that, and so on to the limit; for we could have no notion of the limit were it not in some fashion given to sense. Yet even here space is relative, though only in the last analysis; relative to bodies, by which it is the capacity of being occupied. And this capacity means that something may move in—which in turn involves time. Thus it is impossible to describe space without at least eventual reference to time, whereas time may be described without reference to space though in fact the two are mingled. Time and space are tied together, but not glued together; and the cord is very elastic, for space can recede to an indefinite remove from time. Moreover, though the cord is made fast to the inwards of space, it is affixed to time only on the surface. Space implies time more than time implies space, while also space can roam free to an almost unbounded extent.

When philosophers declare that space and time are thoroughly interpenetrated, they seem to be unduly swayed by the modern love of connectedness, and the correlative hatred of the dissociated and solitary.

It has scarcely been recognized that time is the opposite of space; opposite as motion and rest are opposite. Time means change, which is both destruction and creation; space can not be destroyed, nor can new space arise, however far space be penetrated by time. Time can not be empty; space can be and as regards gross matter must be,

to allow motion. Space thus, by its negativity, makes room for time, which is full, to pass. Time also is impossible without differentiation, being succession of events, of which the present *exceeds* the others in actuality; space, being a potency, and by itself, empty, is everywhere the same, and as homogeneous as pure nothingness. Even if we supposed that space grew smaller as we receded from a given spot, that would be rather a body growing smaller; for if space were smaller, we need only draw upon the surroundings to make it larger. If a straight line be supposed to have curvature, we need only swerve from that line in a direction opposite that of the curvature, to find the true straight line. Homogeneity is no postulate or convention, but a deliverance of experience, or a consequence thereof; for whatever variations are displayed may be compensated from the surrounding void. Again, time is a device for securing a manifold without many things; an accomplishment which space can not compass. Space on the other hand makes up for the destructive affect of time by its power of coexistence; thereby something permanent persists along with, or underneath, the series of changes, and the integrity of substance is preserved through change. Time is irreversible and space is symmetrical; which explains why we experience only a little jot of time, the small specious present, while we can see nearly one half of infinite space. Moreover, to take for granted some of the later categories, we can see a whole series of complementary terms connected with these two respectively. In time, history is alone possible, with its progress or retrogression; also purpose and causation, which are the roots of value, responsibility and other categories of personality. Space, on the other hand, gives us the type of a fixed, ordered universe, such as rationalists and systematists love. It is the inspiration of the pantheist Spinoza, who wrote *ordine geometrico*, and of absolute idealism, which depreciates time. The latter is the guide of monadists or personalists; of a practical philosophy like Thomism, whose central category is causation. In fact the whole cleavage of theory and practise, of structure and function, of equality and privilege—the great body of human dualisms, takes its origin from this objective source. But for the present we do not show this in detail; we concentrate attention on a distinction which is fundamental for later insights, *viz.*, that space is quantitative and time is not. More exactly, space has but a minimum which is non-quantitative—the point—while time has but a minimum that is so—the little specious present; and even this varies irresponsibly.

The reason why time is not a quantity is that it is not a whole, for the parts drop out; as Baron Munchausen's horse, whose rear was cut away, could not be filled. Scientists often speak as if they

measured time, but they do not do so at all; and Professor Bergson is, we think, quite right in saying that science, and philosophy too, have too much cast reality into the mould of space. Science really does nothing but note coincidences between different events, and predict further coincidences. Whether all clocks and other material processes go faster in one day and slower the next, or as is generally supposed, at a uniform rate in both, is quite indifferent; all that calculation and prediction require is that the processes keep step. If the clock's hand goes around $24 \times 365\frac{1}{4}$ times every time the earth goes around the sun, that is enough for science. If the clocks, accurately made, keep time with one another, so that each angular position of the hands in one corresponds to the same in another, no more is needed. Science aims only to predict that when the hands are in a certain position, a certain event will occur. When a pendulum swings back and forth there is neither inequality nor equality of the intervals. If they feel equal or unequal, that is perhaps because we unconsciously estimate them in terms of bodily rhythms. The length of these we do not know, nor have we any test of their uniformity. The feeling of equality or inequality may, in fact, be as illusory as the feeling that we directly see a distance. Mr. Broad, who accepts time-quantity, argues that "it is very unlikely that the rotation of the earth, the swings of a pendulum, and the vibrations of an electron are all retarded according to the same law."¹ But we do not need to suppose these processes retarded alike, or hastened alike, or uniform. We simply want the events in them to correspond point for point. Difference of velocity means different amount of displacement in two bodies whose motion begins and ceases simultaneously. The displacement may be actual or potential. If body *A* has at one instant a tendency to greater displacement than body *B* at one instant, *A* has the greater velocity. Thus velocity may be defined without presumption of time-quantity. Time deals with events, not quantities; events ordered in a series where each has a definite position before, or after, or with, some other. Thus order does not imply quantity, though it may correspond to quantity; while quantity no doubt does imply order of less and greater, even as space implies time. To be sure, we say truthfully that a day is longer than one of its hours. Yet that could not be, unless a day signified that the earth had gone through more space by the 24th than by the end of the first hour. We define day and hour by reference to quantity of displacement, and then of course they seem quantitative. But in a non-spatial world, where a substance went through a series of changes, the only mean-

¹ *Perception, Physics, and Reality*, p. 318.

ing we could assign to time would be the number of changes it had suffered. In a wholly mental world, for instance, if a substance should go through a series of changes and then return identical to its original state, time would so far retreat on its own tracks and the past would be revoked.

In space, however, there is true quantity, because there are wholes whose parts stay to fill them up. Nor does the equality of two lengths depend upon the motion of a measuring-rod, superposed on each in turn and postulated as invariant. To compare the lengths of two straight lines A and B , we describe a sphere with A as radius, select the position A' of that radius which is parallel to B , and construct a parallelogram whose opposite sides are A' and B , and whose base is the line joining the corresponding ends of A' and B . If then the upper side starting from the other end of A' cuts line B exactly at its other end, B is equal to A ; otherwise it is unequal to A . Obviously it is the simultaneous presence of the entities concerned which renders the test possible. But in time the backward end of our line always drops out. If we are to represent time by a line, it will not be by a straight line, which has a fixed length. The line will have any curvature we wish; it may even curve back into its beginning.

Until recently it was believed that all the processes of nature do keep step. So the defender of time-length says "whilst it is perfectly possible that a series which seems isochronous and fulfills the conditions with respect to another apparently isochronous series might not obey them when tested with respect to another apparently isochronous series, yet, as a matter of fact, this does not generally happen."² The reason all the processes or series seem to vary together is, no doubt, that they are of about the same order of magnitude. When we come to compare very high velocities with them, we find that the two orders do not keep step. The speed of light does not, like other speeds we are conversant with, increase as we move toward, or decrease as we move away from, the light-source. Now if uniform velocity meant equal space in equal times, then our time would have to shorten itself, or our space to enlarge itself, to account for the discrepancy; but both of these are really absurd. If, however, time has no fixed quantity, there is no reason why a series of changes like the light-waves should always give the same number for the same number of swings of the clock's pendulum. Keeping step between pendulums and light-waves is a phenomenon which can not be predicted or expected *a priori*. There is nothing paradoxical in its absence. The only paradox lies in the

² C. D. Broad, *Perception, Physics and Reality*, p. 321.

interpretation; in time being itself altered, or space changed in amount. Indeed, these conceptions refute themselves; for if time is hurried or delayed, there is a standard time by comparison with which the change is to be detected, and this standard is itself unaltered. And the same holds, *mutatis mutandis*, of space. But while we have very good empirical reasons for predicating quantity and uniformity of space, we have no such reasons for doing the same by time. So much on the topic of the opposition between space and time.

If substance is more real than relation, time is in the same way more real than space. Time lives by emphasis; we note its passage by rhythms, which impress our attention, whereas contemplation of the uniformity of space tends to sleep, as when we gaze into the crystal. So beauty of sound, or music which is given to hearing the temporal sense moves us far more than beauty of sight, as of color or form. But if time is stronger than space, space is bigger than time. Not only has space three ways of extending, but it lies there a vast empty potency, offering equal opportunity to all material possibilities, and exercising no restrictive force. Time does not actually lie out before us, for the future is not an empty receptacle, but is largely predetermined by past and present. Later we shall see that space is the source of chance, as is time of causation; at present it is enough to say that they are related somewhat as act and potency. In consequence of their asymmetry, they do not look opposite. For time is, to our spatialized mode of thought, easily symbolized by a line, and a line does not appear complementary to a volume. But time is not a line, in which the elements coexist. Extensive quantity does not characterize it; rather we must say that time is intensive. If the present is big with the future, the bigness is a density; while space is big, not with any precise future, but with all futures, as well as present and past—in short, space is big irrespective of its particular contents, big with its own bigness. And in fact, all the comparisons we have made between time and space show the asymmetry of their relationship; none more so indeed, than the most obvious difference of all, that time itself is asymmetrical while space is perfectly balanced in all directions.

We proceed to the next pair of categories. As relation was found to comprise space and time, so space is found to contain two sorts of entity, *viz.*, qualities and quantities. Quantities are directly sensed in the very perception of space; qualities, while equally sensed, are given in connection with things or substances. The empty separation or stretch between two stars has quantity; the

positions of the stars themselves are revealed by qualitative distinction of light from darkness. If positions are compared with lengths, the qualitative terms of space, those terms are marked out by being occupied; and it is the qualities of things that occupy them. Quantities are more akin to pure space, while qualities inherit more the traits of their grandfather, substance, and their father, time. Qualities might, indeed, be found in a spaceless time-world, in the form of nodes in the fortunes of a single substance; even in a pure space-world, they show their kinship with substance by inhering in the diverse substances which people that world. They are unique and simple, with the uniqueness of the present moment; they change, as positions by themselves can not do, either by movement or by gradation of degree. They are, like substance, self-contained, leaving no intrinsic reference to anything else; as a blue spot in the darkness contains no reference to red or other color, and is only blueness. But a quantity is intrinsically all quantities, as it is continuous and infinitely divisible; likewise it is relative to external quantities, being limited by them. Quantity is continuous because it is derived from space, which is in all ways homogeneous. Qualities on the other hand are discrete, no matter how finely graded be the transition from one to another. In a band of color passing from pure red through purple to pure blue, there is a definite point where blue enters and another where red departs. But a geometric line has no such points marked off, unless cut by another line of different *direction*; and directions, like positions, imply quality.

From the above it is easy to see that quality and quantity form a connected and asymmetrical couple of opposites. They are connected in that particular quantities are marked out by their color or brightness, which are visual qualities. Thus quantities of themselves imply the presence of some quality. But quality is not so intimately bound with quantity, just as substance, we saw, is not so intimately bound with relation, or time with space. Time could occur in a single thing, and so could quality. Most qualities, however, are quantitative, having degree or intensity; this is due to quantitative properties of moving particles, such as velocity of oscillation. Yet this phenomenon does not seem essential to the very being of a quality; all colors might have but one degree of brightness or saturation, all sounds the same loudness, without ceasing to be perceptible or significant. Quantities, however, contain just that implication and necessary connection which qualities lack; they continue the tradition of the category of relation, as qualities continue that of substance. Quantity is the region, there-

fore, of calculation, of discovery of something new from the already given, by implication; quality is a resting-point for the inquiring mind. From the point of view of one quality in space, it is chance what the others will be. Thus in the space-world, each of these categories affirms what the other omits. And their asymmetry is seen also in this same matter of implication. Quantity is a fecund attribute, an abstract relational affair rich in potentialities for thought because poor in individuation. Quality has more of actuality, quantity more of potency in the scheme of the material world.

Before tracing out further the categorical pattern, we must notice that we have now before us something like a completed first stage, or cycle. The third pair of categories is a union of the first two pairs, and thus closes the circle. Real things or substances in time and without space to move in, *must* possess quality; there is no other way in which change could be accomplished in them. Quality thereby enables substances to change; it is the link which unites them with time. On the other hand, relations between things in space, where there is no time and no motion, are fixed distances, and distance is a quantity. A quantity is thus a relation assuming the objective form of space; extensive in the first instance, and intensive when applied to a momentary quality. Our first six categories then complete a circle; but as the range of information to be acquired in this six-fold universe is far wider than in the original two-fold world, we had better use the spiral as our figure. The spiral is an open circle, wherein we ever return to the original reality with a greater breadth of knowledge. And at the same time we have unwittingly added a seventh category to our list, which has no mate; to wit, the category of the whole, the synthesis, the identity through difference of the material already presented. But we would emphasize the objectivity of the process; none of the categories, not even the seventh, are devised by man. They are discovered; man's activity is only that of directing his attention. Nor are the later categories deduced from the earlier; they are found branching from them in the epigenetic, not the preformative way.

That a natural cycle is here finished, is confirmed when we reflect that all the categories used by the sciences of external nature have now been provided, either explicitly or implicitly. To give an example or two: the atomic theory is but the scheme of the heavenly bodies in space, transformed to suit the needs of microcosmic explanation. Like the stars, the ultimate atoms are single or in clusters, drifting, streaming, revolving; the greatest difference

being in the extreme rapidity of atomic movements on the whole, as compared with those of the sidereal system. Again, the elementary quantities of physical science are said to be length, mass and time. If one account is correct there are really two, length and mass. Of these, length is already delivered, while mass is but quantity of matter, that is, of inertia. The prejudice against "quantity of matter" may be dismissed along with the dislike of substance. If matter is everywhere of uniform density, then mass is correlated with volume and is an extensive quantity. If density differs from atom to atom of equal volume, then mass is an intensive quantity.

We shall not here trace in detail the discovery of further categories; we confine ourselves to indication of the method of that discovery. Man has two faculties used for the purpose, sense and thought. Indeed, these two are related perhaps as the members of each couple above are related; that does not now concern us. Thought scrutinizes the gifts of sense, which takes its material direct from nature—even as animals feed upon the stores of energy laid up in green plants, which draw their sustenance direct from the environment. In scrutinizing, thought finds a thousand-fold more than sense has mentioned, in the package it has conveyed. Thought works also in two ways, by analysis and by synthesis. In both alike its activity consists in the fixing of attention upon the given; but in the former the model of the substance-time-quality series is its guide, and in the latter the model of the relational categories. Analysis observes each category by itself, whether it be a category of the substantive side or one of the relational side. Synthesis observes the relations between categories, whether they be the categories of the one group or the other. Let it now suffice to say that by these two methods we derive the remaining concepts used in science, such as identity and diversity, unit and collection, individual and universal, permanence and change, discreteness and continuity, ordinal and cardinal number, and so on. There is, however, one pair whose nature can not be fully understood from the study of these formal categories alone. Causation and chance are categories of the real world—though modern philosophy, unlike ancient and mediæval, has a curious bias against chance—and they seem to form an exception to the statement we made, that we had provided all the logical instruments of scientific research. They serve indeed to remind us that our world is not a merely formal affair, but a substantial one also. Modern philosophy, indeed, formalistic as it is, does tend to deny causation as well as chance; that is, as we hope later to show, because it has lost the category of

substance. In order to understand causation and chance, we must betake ourselves to that side of nature's dichotomy which is revealed under the head of substances. We must study the different kinds of real things, and their relations to one another; the nature of the distinction between living and non-living, mind and body, animal and plant, green plant and bacterium, and so on.

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THE LENGTH OF HUMAN INFANCY IN EIGHTEENTH-CENTURY THOUGHT

IN a recent number of this JOURNAL¹ Professor W. R. Wells points out an historical anticipation of the late John Fiske's "theory regarding the meaning and value of the prolonged period of human infancy in comparison with the briefer infancy of lower animals." Fiske called attention to the fact that, in Professor Wells's words, "a long period of infancy is valuable, first in giving time for educative influences to work upon the plastic brain and in making possible thereby a higher development of the mind, and second, in making necessary a greater degree of parental coöperation than is the case among the lower animals"—thus resulting in "the development of the domestic virtues." These considerations seemed to Fiske at once to "bridge the gap between brute and man," to "account for the evolution of human intelligence and morals," and to aid in "justifying the ways of God to man." But, as Professor Wells notes, the same considerations had been dwelt upon—especially with the third of these purposes in view—by an anonymous writer in *The Friends' Annual* in 1834.

There is, however, nothing surprising or "striking" about this anticipation of Fiske; for precisely the same observations concerning the significance of the longer infancy of the human animal were among the familiar commonplaces of eighteenth-century thought. They were expressed both in the philosophical poem and in the political treatise most widely read in that century.

In his account of the beginning and early stages of human society, in the *Essay on Man* (1733), Pope wrote (Epistle III, 125 ff.):

Thus bird and beast their common charge attend,
The mothers nurse it and the sires defend;
The young dismissed to wander earth or air,
There stops the instinct and there ends the care. . . .
A longer care man's helpless kind demands;

¹ Vol. XIX, p. 208.

That longer care contracts more lasting bands . . .
 Still as one brood, and as another rose,
 These natural love maintained, habitual those.²
 The last scarce ripened into perfect man
 Saw helpless him from whom their life began, etc.

Pope thus plainly points to the greater length of human infancy as the cause of the development of the family relation and of the domestic virtues; and he does so as a part of the argument of a poem of which the professed object is "to vindicate the ways of God to man."

The *Essay* is in great part a versification of passages of Bolingbroke's *Fragments or Minutes of Essays*, which appear to have been written for the purpose of thus providing the poet with material. But Pope here sees the point better than his philosophical mentor. Bolingbroke was attempting, on the one hand, to show that "man is connected by his nature . . . with the whole tribe of animals, and so closely with some of them, that the distance between his intellectual faculties and theirs, which constitutes as really, though not so sensibly, as figure the difference of species, appears, in many instances, small, and would probably appear still less, if we had the means of knowing their motives, as we have of observing their actions."³ On the other hand, he is replying to those theologians who loved to dilate upon the miseries of the "natural state of mankind." He writes accordingly:

I say then, that if men come helpless into the world like other animals; if they require even longer than other animals to be nursed and educated by the tender instinct of their parents, and if they are able much later to provide for themselves, it is because they have more to learn and more to do; it is because they are prepared for a more improved state and for greater happiness. . . . The condition wherein we are born and bred, the very condition so much complained of, prepares us for this coincidence (of social and self-love). . . . As our parents loved themselves in us, so we love ourselves in our children, and in those to whom we are most nearly related by blood. Thus far instinct improves self-love. Reason improves it further.⁴

Bolingbroke here emphasizes the value of a long infancy "in giving time for educative influences to work upon the plastic

² Cf. these two lines with Fiske's *Outlines of Cosmic Philosophy*, IV, 134: "When at last the association is so long kept up that the older children are growing mature, while the younger ones still need protection, the family relations begin to become permanent."

³ "Fragment L," *Works*, 1809, ed.; VIII, p. 231.

⁴ "Fragment L," op. cit., p. 240. Pope versifies the last four sentences cited in *Essay on Man*, Ep. III, lines 149, 124, 133-4.

brain," but he suggests less plainly than Pope a relation between this physiological peculiarity of the human species and the origin of society.

There is in this, however, no evidence of originality on Pope's part; for the more significant aspect of the matter had been pointed out nearly half a century earlier by Locke, in Sections 79-80 of the *Second Treatise of Government*:

The end of conjunction between male and female being not barely procreation, but the continuation of the species, this conjunction betwixt male and female ought to last, even after procreation, so long as is necessary to the nourishment and support of the young ones, who are to be sustained by those that got them until they are able to shift and provide for themselves. . . . And herein, I think, lies the chief, if not the only reason, why the male and female in mankind are tied to a longer conjunction than other creatures, *viz.*, because the female is capable of conceiving, and, *de facto*, is commonly with child again, and brings forth too a new birth, long before the former is out of a dependency for support upon his parents' help. . . . (Thus) the father is under an obligation to continue in conjugal society with the same woman longer than other creatures, whose young, being able to subsist of themselves before the time of procreation returns again, the conjugal bond dissolves itself. . . . Wherein one can not but admire the wisdom of the great Creator who . . . hath made it necessary that society of man and wife should be more lasting than that of male and female among other creatures, that so their industry might be encouraged, and their interest better united, to make provision and lay up goods for their common issue.

How far beyond Locke the same idea can be traced I do not know, but it is certain that the "theory regarding the value of infancy" which Fiske presented in 1874 as something "entirely new in all its features"⁵ had been clearly set forth as early as 1689, in one of the most familiar classics of English political philosophy.

Moreover, neither Mr. Fiske nor his Quaker precursor seem to have noted that their theory had been subjected to some rather damaging criticism by Rousseau in 1755, in a note appended to his *Discourse on the Origin of Inequality*. Referring to the passage of Locke cited above, Rousseau remarks, in substance, that, if it is a question of explaining the origin of the family, the thing primarily to be accounted for is the beginning of the permanent cohabitation of male and female during the nine months between copulation and the birth of the child. If the parents did not live together—*i.e.*, if the habit of family life had not already been formed—during this period, why should the primitive human male have come to the aid of the female "*after the accouchement*"? "Why

⁵ *Outlines of Cosmic Philosophy*, I, p. viii.

should he aid her to rear an infant which he does not even know to be his, and the birth of which he has neither purposed nor foreseen?" Locke, in seeking in the length of human infancy an explanation of the beginnings of the permanent family, has forgotten, Rousseau intimates, another characteristic of the human species—the long period of gestation. When this is borne in mind—as Rousseau's criticism implies—it becomes evident that the proposed explanation presupposes the thing to be explained. The helplessness of the human infant certainly would not have united the parents unless they had already, for a considerable period, been united; and if their union had endured for so long, it is not obviously necessary to invoke additional explanations to account for its having endured longer—especially as the period of helplessness, Rousseau suggests, was probably much briefer in the case of primitive man. At all events, the first and great transition—that from casual matings to relatively lasting cohabitation of the sexes—is left unexplained by the theory in question. Thus—for these and other reasons—Rousseau concludes that *le raisonnement de Locke tombe en ruine*.

He would probably have pronounced a similar judgment on later examples of the same argument. For the weakness of the argument should have been still clearer by the time it was revived in the late 19th century. It was then well known to naturalists that the family is not peculiar to man; and that, apparently, "in the higher apes monogamy is the rule, the male and female roaming at large in a family party."⁶ The gorilla, for example, "lives in a society consisting of male and female, and their young of various ages and the family group inhabits the recesses of the forest. . . . The male animal spends the night crouching at the foot of the tree, and thus protects the female and their young, which are in the nest above, from the nocturnal attacks of leopards."⁷ Fiske ignored the zoölogical knowledge of his time in declaring that "while mammals lower than man are gregarious," it is only in man that there "have become established those peculiar relationships which constitute what we know as the family."⁸ The fact is simply that some species are of a monogamous or monandrous habit, and that the ancestors of man were probably of such a species.

⁶ Pycroft, *The Courtship of Animals*, 1914, p. 25.

⁷ Hartmann, *Anthropoid Apes* (1885), p. 231. Garner, however, describes both gorilla and chimpanzee as monandrous but not usually monogamous. "The chimpanzee," he asserts, "keeps his children with him until they are old enough to go away and rear families of their own." (*Apes and Monkeys*, 1900, pp. 99, 232.)

⁸ *The Meaning of Infancy*, p. 29.

Why an animal has this characteristic we do not know. The theory of natural selection would, indeed, suggest that *if* the young of a species remain helpless for a long period, that species is more likely to survive if the male remains with the female and aids her to defend the young. But this would only mean that a primarily unfavorable variation—helpless infancy—was accompanied by another variation which in some degree offset its disadvantages. The latter variation can not have been *caused* by its effect—the better protection of the young; and it therefore is not explained by that effect. And it must, as Rousseau's observation suggests, have manifested itself primarily as an instinct to continue with the same mate or (in the case of the male, in some species) mates, *before* the birth of offspring. Fiske fell into an extraordinary inversion of causal relations, and at the same time missed the fact that really needed to be accounted for, when he wrote that "one effect [of lengthened infancy] of stupendous importance" was that, among our "half-human forefathers," as "helpless babyhood came more and more to depend on parental care, the fleeting sexual relationships established among mammals were gradually exchanged for permanent relations."

As an explanation of the origin of the family, then, Fiske's theory was neither new nor true. Nor did it show the "value," in the sense of the indispensability, of prolonged infancy, even as a means to man's greater intellectual attainments. It was not evident that the continued plasticity requisite for the learning-process need be inseparable from physical helplessness.

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BOOK REVIEWS

Nietzsche, sa Vie et sa Pensée. Vol. III; *Le Pessimisme Esthétique de Nietzsche, sa Philosophie à l'Époque Wagnérienne.* CHARLES ANDLER. Paris: Éditions Bossard. 1921. Pp. 390.

Nietzsche's mental curiosity knew no bounds. So, difference of opinion might well arise over the crowding recitals of Volume II (*cf.* this JOURNAL, Vol. XIX, No. 11), especially with reference to the relative importance of the influences exerted by persons and, no less, by ideas "in the air." Nevertheless, such opportunities for divergence, seeing that they are capable of control to some extent, pale when we come to Volume III with its attempt at synthetic treatment of the Nietzschean "philosophy," and its search (inevitable it would seem), for "system" (*cf.* Bibliographical Note,

p. 20). The volume contains an Introduction (discussing the "philosophy"): three Books—"The Origins and Renaissance of Tragedy"; "The Origins and Renaissance of Philosophy"; "The Origins and Renaissance of Civilization": and a Conclusion (concerned chiefly with Nietzsche's pet idea of a "philosophy of civilization").

The Introduction assumes, *sans phrases*, that Nietzsche was a philosopher; and proceeds to an interesting exhibit of his relation to "system." Andler takes care to emphasize the four styles of composition and, as concerns "system," points out that "an invisible force tends to weld the numerous fragments." Therefore, in his reconstruction, he confesses to "preoccupation with the history of ideas, not of literary fragments" (p. 27 note). He finds that three Periods emerge successively: "Romantic Pessimism" (1869-76); "Sceptical Positivism" (1876-81); "Reconstruction" (1882-8). The question whether Nietzsche ever thought philosophically is not raised and, although the likeness to Plato finds recognition (*cf.* Bk. II., Ch. II., Sect. IV.), perhaps for this very reason, the approach is that of a literary man rather than of a philosophical expert. Nay, the hand takes color from the dye in which it works. For, the emotion of superior spirits "*n'est que l'élan irrésistible avec lequel leur esprit se hâte vers le terme où le raisonnement vulgaire s'achemine avec une lenteur réfléchie*" (p. 16). In short, we have a continuation (raised to the *n*th power, if you please,) of prepotent Romantic *Kulturgeschichte*, sublimely stepping from peak to peak in seven-leagued boots. And yet, the apostle of "extreme relativism" is to arrive at an absolute.

"M'insegnavate come l'uom' s'eterna."

We must have patience for a while, hoping to find some resolution of the *impasse* as the drama unfolds further.

Chapter I of Book I gives a straightforward account of views about the origin of Greek tragedy, and of Nietzsche's attitude to the problem. There is an informing philological note on his projected Hellenic writings, and on the seven plans for the *Birth of Tragedy*, itself a fragment of the larger work on the Greeks, never written. The hesitation due to clash between ideas derived from Schopenhauer and Wagner receives due consideration. Nietzsche's well-known judgments on the parts played respectively by Æschylus, Sophocles, and Euripides-Socrates are summarized neatly. Chapter II tells why Nietzsche saw the resurrection of Greek tragedy in the Wagnerian drama, explaining the parallel factors of the "Dionysian soul," the "faculty for mythology," and the "artistic audience." Art proves once more that men are better

than "voracious and monstrous" Nature. Chapter III gives a competent summary of the "quarrel over Greek tragedy" resultant upon the scrap—the name is not too undignified—between Nietzsche, Wilamowitz, Rohde, and Wagner. Having assessed the rights and wrongs, Andler proceeds to show how this youthful *emeute* determined the positions of Wilamowitz and Rohde throughout life, and concludes with an outline of recent tendencies in investigation, tracing the dead hand of Nietzsche in many ways.

Book II treats Philosophy after similar fashion, delineating Nietzsche's attitude ("the philosopher is the physician of *Kultur*"), and his peculiar views about the Pre-Socratics and Socrates, in Chapter I. Chapter II brings us at one fell swoop to modern philosophy, with its "*savants* submerged in the infinitely little," Schopenhauer the bright, particular exception. But, whatever his intellectual power, the crass vulgarities of the Frankfort curmudgeon prevented him from being the philosophical Moses. Hence, as Andler points out, following Frau Föster (p. 155), the ideal thinker was drawn by Nietzsche from himself, decked with certain traits from Wagner—not Goethe. And so we are led to the "Platonism of Nietzsche," interpreted persuasively. With Chapter III, "The First System of Nietzsche, or Philosophy of Illusion," we find ourselves, for the first time decisively, in full tide of controversial affairs. Differing sharply from Raoul Richter, for example, who says that Nietzsche was "unsystematic, confused, and dilettante" at this stage, Andler affirms "the total cohesion of his thought" (p. 172), admitting the audacity of the standpoint. The remainder of the volume is, in effect, proof. Indeed, so much so that, on p. 302, when the conclusion of the whole matter looms in sight, Andler can affirm, Nietzsche's "systematic thought is of marvellous continuity."

The causes of the "illusions" of knowledge, morality and art exposed, we find that, between 1870 and 1874, Nietzsche fell back upon an "impersonal memory" and a "collective imagination," taking metonymy for cool reason; in fact, falling victim to an obvious phase of the substance-attribute fallacy, not abandoned till after 1876. The general spirit is that of Schopenhauer, tempered by the Wagnerian dogma of musical ecstasy as a "veritable philosophic revelation." But Lamarek and Emerson work like yeast, with the result that Nietzsche begins to "slip." He realizes that "transformations" are imperative, and can be accomplished by the "internal energy which upholds all life." Accordingly, a "practical" metaphysic, in the form of a theory of civilization, asserts itself. Book III is devoted to a "reconstruction" of this.

Chapter I deals with Greek civilization, which seconds Schopenhauer's psychology, but contradicts Nietzsche's nascent conception of value (p. 225). Chapters II and III show that, in face of modern philistinism, Wagner plays the rôle of a "counter-Alexander," while Germany may be destined to enact that of a messiah. We learn that the idea of "value" may be reconstituted by the "immense reserve energy of heroes, thinkers, artists." But, to this end, these seminal persons must rise superior to the three great ogres—the State, Capitalism, and Science, bemused by the fatal belief that man has a natural right to happiness. The hodmen of feudalized science know as little of real life as their more ignorant contemporaries. Debility or cynicism leave their blighting trail everywhere. Even the fair humanities produce mere "*des hommes enrégimentés*" (p. 390). "Reconstruction" of the *Prometheus* fragment issues in suggestions as to the new culture, and presages the fateful doctrine of "eternal return."

Thanks to a misprint, common to text and to *Table des Matières*, there is no Chapter IV. Chapter V exhibits Nietzsche's plan for the reorganization of education, necessary to rid the innocent youth of "false culture, the journalistic spirit, and superficial rhetoric" (p. 305). Chapter VI gives a subtle exposition of the part which Nietzsche expected Bayreuth to play in this transformation, and indicates how a "New Wagnerism" formulated itself in his mind, rendering a break with the composer inevitable" (p. 318). Nietzsche's limitations and positive errors at the moment are set forth (p. 326 f.). Despite them, however, Wagner's "dynamism" prefigures *Zarathustra*. The outcome of the first period is the conviction that a superior civilization must be developed; and even Schopenhauer was full of obscurity on this point, while Wagner, after arousing great expectations, fell from grace. So Nietzsche came to sense the need for other guides, and turned to the French moralists.

The Conclusion furnishes a most instructive account of Nietzsche's attitude towards the problem of civilization; of his debt to Greek culture, and to the Greek intellect which followed the question whithersoever it led; and of his personal philosophy at this time. Nietzsche committed himself to no choice between "intellectualism, naturalism, and personalism," finding defects in all. He proceeded to correct them by a new apriorism of values, simulating the system of the elder Fichte—a very suggestive remark, not elaborated! Recall von Hartmann's unacknowledged plunder from the same source! This philosophy, motivated by "liberty of the spirit," brought him into conflict (or competition) with the personal revela-

tion of Jesus. "*La loi de génie serait hétéronomie pour la foule. La loi des foules est hétéronomie pour le génie*" (p. 379).

Two questions, and one request, are in order. What are we to hear of the influence of Ludwig Feuerbach, who dominated thought in Germany and Teutonic Switzerland 1845-65? whose *Wesen des Christenthums* was "the third crow of the cock of the spirit of German liberty"? (cf. *Washington University Studies*, Vol. IX, No. 1 (St. Louis, 1921), pp. 32 f.). He it was who gave Wagner his start. Of his less important oldest brother, Anselm, the archæologist, we heard a good deal in volume II (pp. 229 f.). Again, what direct contact, if any, had Nietzsche with Count Arthur de Gobineau? This seems to me a question at once most obscure and most seductive. Finally, I beg M. Andler to furnish a complete index. His volume must be thumbed by all Nietzsche scholars and, for this purpose, the present *tables des matières* are quite inadequate.

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Philosophy and the New Physics. An Essay on the Relativity Theory and the Theory of Quanta. LOUIS ROUGIER. Translated by Morton Masius. Philadelphia: P. Blakiston's Son and Company. 1921. Pp. xv + 159.

The title of this essay in the original French—*La Matérialization de l'Énergie*—is more exactly descriptive of it than the English substitute. There is in fact almost nothing in the book in the way of metaphysical generalization from the physical theories that are examined; and there is but a page or two of comment on the importance for physical theory of the pragmatist conception of truth. The book should be none the less interesting to philosophical readers. Those who have given some serious attention to recent advances in physics will be glad to find this well-ordered and illuminating summary. Those who would like to set about the study will find the field mapped out for them, and a useful bibliography of French, as well as German, books and articles. And those whose interests lie elsewhere will find here the means of "speaking with an appearance of wisdom" upon these important topics.

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JOURNALS AND NEW BOOKS

JOURNAL OF EDUCATIONAL PSYCHOLOGY, October, 1921. *The Reading Problem in Arithmetic*: PAUL W. TERRY (pp. 365-377).—It has become recognized that a definite and distinctive problem in reading is to be found in each of the elementary-school subjects. An investigation was conducted on the reading problem in arithmetic. The records show that the numerals of problems make decidedly greater demands upon attention than the accompanying words. Less than half as many digits as letters are perceived during one pause of the eye. *An Experimental and Statistical Study of Reading and Reading Tests*: A. I. GATES (pp. 378-392).—The second instalment; concluded in the November issue. *The Results of Retests by Means of the Binet Scale*: J. E. W. WALLIN (pp. 392-401).—The study is based on two testings of 136 cases, three testings of 16 of these cases and a fourth testing of one. The intervals varied, the average between the first and second tests was 2.2 years, range $\frac{1}{2}$ to 6 years. The average interval between the second and third tests was two years, range 1 to 4 years. The necessity of validating the accuracy of the Stanford norms—and revising the tests and administrative procedure—on the basis of the testing of a large number of unselected children from various sections of the country is urgent. The tentative conclusion is that most of the Stanford age norms are too difficult, thus exaggerating the subjects' deficiency. *Mental Growth and the I. Q.*: L. M. TERMAN (pp. 401-407).—Several other contributions on the validity of the I. Q. are mentioned. *Criteria to Employ in Choice of Tests*: R. FRANZEN and F. B. KNIGHT (pp. 408-412).—We should insist upon the use of tests which can be proven to test what they purport to measure, which are reliable and objective, which are scaled and which have well-defined norms based on sufficient material. *Personal Judgments*: E. E. LINDSAY (pp. 413-415).—Teachers' estimates of children's native capacities and these capacities as determined by as scientific method as possible, were compared. Seven members of a teaching group judged students after a month's class-room acquaintance. The group judging was a highly selected one and the group judged was small. The conclusions drawn are (1) Teachers' estimates of children's native capacity are significant but to no marked degree, (2) training and experience of the teacher do not seem greatly to affect this significance, (3) individual judgment of the same children by observers with approximately the same contact differ widely, (4) other factors than native ability to enter into one's judgment of same. *Notes. New Publications.*

SCIENTIA. December, 1921. *La loi des grands nombres* (pp. 433-438): C. V. L. CHARLIER (Lund).—La Place's world-formula, even if it found the intellect who could deductively think it through, could never be established on the basis of observation, for observation is essentially approximate. All science is, therefore, of necessity statistical, and deals with average effects, not with individuals. *Geological Conquest of the Air* (pp. 439-446): CHARLES R. KEYES (Des Moines).—Only recently have we come to realize the power of the wind to shape topography, particularly in the arid desert lands. *Le type chimique et la substance des corps simples* (pp. 447-454): MAURICE DE BROGLIE (Paris).—Summary of facts about isotopes, with emphasis on their fundamental character for the most recent chemistry. *Les dommages économiques mondiaux causés par la guerre* (pp. 455-466): FILIPPO VIRGILII (Siena).—Shows the complexity of the calculations of war costs, and the elements of gain that must also be taken into account, yet concludes that 2500 billion francs of loss remain, a terrible drain on all humanity. *La question sociale: élargissons le socialisme* (pp. 467-472): GEORGES RENARD (Paris).—Decidedly idealistic sketch of a programme of reform. *La théorie de l'évolution en neuropathologie* (pp. 473-479): MARIO CARRARA (Turin).—The more recently evolved the reaction, the more easily is it subject to pathological alterations. *Reviews of Scientific Books and Periodicals.*

Lavelle, Louis. *La Dialectique du Monde sensible*. Oxford and New York: Oxford University Press. 1921. Pp. xli + 232.

Lavelle, Louis. *La Perception de la Profondeur*. Oxford and New York: Oxford University Press. 1921. Pp. 72.

de Tourtoulon, Pierre. *Philosophy in the Development of Law*. Translated by Martha McC. Read. New York: The Macmillan Co. 1922. Pp. lii + 635. \$5.

Heermance, Edgar L. *Chaos or Cosmos*. New York: E. P. Dutton & Co. 1922. Pp. xxi + 358. \$3.

Malebranche. *Entretiens sur la Métaphysique et sur la Religion suivis d'extraits des Entretiens sur la Mort*. (Publiés par Paul Fontana). 2 volumes. (Collection Les Classiques de la Philosophie). Paris: Librairie Armand Colin. 1922. Pp. xii + 192, 190. 6 fr. 50 each.

Santayana, George. *Soliloquies in England and later Soliloquies*. New York: Charles Scribner's Sons. 1922. Pp. 264.

NOTES AND NEWS

The following article is taken from *Science*, May 12, 1922:

The teaching of evolution in the Baptist denominational schools in Texas is being investigated as heretical. The denomination is strong in membership and maintains about fifteen colleges and seminaries in the state, the chief of which is Baylor University at Waco. It appears that the trouble arose as the result of the publication in 1920, by the Baylor University Press itself, of an "Introduction to the Principles of Sociology," by Grove Samuel Dow, Professor of Sociology in Baylor University. The book is based upon the theory of evolution wherever it touches upon the biological aspects of sociology, although the term biological evolution is scarcely or not at all used in the text. At a recent conference of representatives of the Baptists of all parts of the state, such teachings were pronounced heresy, and a sweeping investigation is being made of all of the Baptist schools of the state to determine how much "heresy" is being taught. Professor Dow has resigned his position.

A somewhat related situation has existed at Southern Methodist University, Dallas, where the teaching of Dr. John A. Rice, Professor of Old Testament Interpretation, has created the severe opposition of a large part of his church. Dr. Rice's book, "The Old Testament in the Life of Today," looks upon the Old Testament as a series of independent historical papers, each subject to its own interpretation. Many are considered as having been revised by several authors before they have reached their present form. Each is regarded as a literary production, subject to all of the rules of literary interpretation; this introduces a personal factor into any understanding of the Old Testament, and completely does away with literal interpretations. Dr. Rice has also left his position, to become pastor of a Methodist church in another state.

S. A. R.

At Columbia University, the following promotions in psychology have been announced: Dr. H. L. Hollingworth to a full professorship at Barnard College; Dr. Arthus I. Gates, Dr. William A. McCall and Dr. Leta S. Hollingworth to associate professorships at Teachers College; Dr. A. T. Poffenberger to an associate professorship at Columbia University.

THE JOURNAL OF PHILOSOPHY

THE NATURE OF SPACE—I

INTRODUCTION

The topic of the present study is to be understood in a very restricted sense, and the essential restrictions must be made plain at the outset. Every textbook of geometry may be said to be an essay on the nature of space, that is to say, of space in the abstract—space *assumed* either as matter of fact or as matter of hypothesis. This little essay does not pretend to rival the textbooks of geometry. It does, indeed, have occasion to treat of some very elementary geometrical concepts, but not of anything more complicated than the straight line. At the same time, it is not content to assume abstract space, either as matter of fact or as hypothesis. On the contrary, its principal object is to exhibit the conception of space in its actual setting in experience.

However, it is not the intention to try to give an account of the whole of this setting, but only of so much of it as is strictly relevant to the *geometrical* treatment of space. With the further physical aspects of space we shall have almost nothing to do. The notion of mass and the notion of a measurable duration will not enter into our discussion—not to speak of the notions of force and energy. But a very important aspect of the meaning of *distance* consists in its relations to mass, duration, *etc.* No man can throw a baseball two hundred yards; and no man can run a mile in three minutes. From the geometrical point of view, the kilometer has no properties distinct from those of the millimeter; and if all the distances in the world were multiplied by a million there would be no change at all. From the physical point of view, even the doubling of all lengths and distances would have a very profound effect upon the world, if bodies on the surface of the earth continued to fall about sixteen feet during the first second.

The reader will, therefore, realize that in restricting consideration to the geometrical conception of space, we very greatly simplify our problem, and at the same time seriously limit the possible value of any solution which we may reach. However successful we may be, we shall have taken but a single step toward the larger systematic knowledge of space, which can only be obtained as an essential part of the knowledge of the general character of the physical world.

There are two motives for this restriction of the inquiry. One is purely personal: the narrowness of the writer's knowledge and competence. This, if it stood alone, would be a better reason for not publishing at all than for publishing the result of a truncated investigation. But there is a further motive in the belief that within the limits that are thus laid down a tolerably complete and satisfactory solution of the problem can be given.

There is this also to be said. While results, such as are here given, are seriously limited in their range, they have a place of their own in the system of science; and at the present juncture their importance may be very great. How far Professor Einstein has gone into detail in this matter, I do not know; but it is clear from his account of the use of "measuring-rods" that some such theory as that here set forth is presupposed by him in his two-fold theory of relativity. Professor Whitehead, who is the author both of an independent account of the electromagnetic theory of relativity and of a revision of Newton's theory of gravitation, has set forth very fully his conception of spatial order and measurement in two remarkable volumes, *An Enquiry into the Principles of Natural Knowledge* and *The Concept of Nature*. That conception is radically inconsistent with the analysis here given.

Certain of the differences between Professor Whitehead's account and the present one may be specified as follows. His account starts with *events*; the present account starts with a certain class of *objects*, namely, *physical solids*. Among the events which he assumes, some are unlimited in three dimensions; here only finite solids are assumed. The assumed unlimited events have, with reference to their fourth (temporal) dimension, a definite *shape*; they are analogous to the three-dimensional space between parallel planes; the solids from which the present account starts are of all possible shapes, but no one shape is assumed as given. Most important of all, however, is the fact that Professor Whitehead makes the conceptions of the point, line, and surface—and the solid, too, for that matter—as well as of linear order, length, and distance, logically dependent upon the intersection of moments of different time-systems; while to me this appears to be a most unfortunate distortion of the actual system of relationships.

There is a deeper ground of difference, however, which ought not to pass unnoticed. Professor Whitehead's work is based upon a certain theory as to the nature of experience, which seems to me to be extremely doubtful. He takes his start from certain data, which, as he believes, are given to us in sensuous experience. My own point of departure is in the behavior of things toward one another, as we manipulate them.

Among Professor Whitehead's incontestably important contributions is his method of "extensive abstraction." In the precise form in which he has described it, it was not available for my purposes. But, in an appendix, I have used a simplified, and in some respects strengthened, form of the method for the definition of the point, the line, and the surface as sets of solids; and I have at the same time showed how the method is related to my own assumptions.

The main body of the essay is in two parts. The first is mathematical; but, lest this should affright any modest philosophical reader, let me hasten to add that the mathematics is of the very simplest character—quite as easy as the easiest pages of the first book of Euclid. (In the notes there are passages that may make rather more difficult reading; but these are not essential.) The object of this part is to lead to as clear as possible a conception of certain of the more fundamental geometrical entities and relations.

The second part is physical. Its object is to determine the empirical foundations of geometry (so far as these may properly be held to lie within the limits of a physical, rather than a psychological, inquiry). The point and the peculiar relation between points, which, in the mathematical part, figure as primary assumptions in terms of which explanation is to be made, are here themselves the goal that is to be attained. The physical part of the inquiry is thus directly supplementary to the mathematical. The former owes its problem to the outcome of the latter.

At the end of the second part, an opportunity arises for making a suggestion the import of which extends far beyond the subject of these pages. This opportunity is afforded, first, by the close similarity of the conception here reached of the principles of geometry, to the conception of physical principles long ago advanced by Galileo, as well as to that recently advanced by Poincaré; and, secondly, by a further analogy to the general principle of empirical science—the uniformity of nature. I shall take advantage of this opportunity to the extent of offering the briefest possible comment.¹

¹ With the exception of the appendix dealing with the method of extensive abstraction, this essay has lain in manuscript for the last five years. An earlier, more general study, *The Nature of Primary Qualities*, was published in the *Philosophical Review* for September, 1913 (Vol. XXII, pp. 502ff.). A second paper, *On the Distinction between Primary and Secondary Qualities*, dealing more fully with certain outlying epistemological questions, appeared in this JOURNAL for February 28, 1918 (Vol. XV, pp. 113ff.).

THE FUNDAMENTAL CONCEPTS OF GEOMETRY

Every reader, the memory of whose youthful days has not faded out completely, will recall that in the study of elementary geometry one sets out from a body of concepts that are accepted as too simple and clear to need definition, and that in terms of these primary concepts one defines all other concepts that belong to the science. The number of these assumed "indefinables" is usually very great; but, since they are not plainly listed and set apart, they may easily seem to be far fewer than a careful search would show.

It has long been an enterprise of mathematicians, dating particularly from the researches of Leibniz, first, to make an accurate list of the assumed concepts of geometry, and, secondly, to reduce their number to the absolute minimum by defining all that can be defined. This enterprise has in recent years been rewarded with a large measure of success. It has been found possible to base the concepts of geometry upon two "indefinables," one of which is an entity, the other a relation.²

What was not anticipated in the old days is the fact that a considerable freedom of choice is possible in choosing the indefinables. The entity chosen is, indeed, usually the *point*. But for the relation there are three important alternatives to choose from, giving rise to three fairly distinct types of geometrical system: projective geometry, descriptive geometry,³ and metrical geometry.

(i) For projective geometry the indefinables are now usually "point" and a certain relation between three points called "to be

² This last statement must not be misunderstood. Geometry makes the freest use of the concepts of formal logic, as well as of the more complex mathematical concepts (particularly those of arithmetic) which are definable in terms of logical concepts. Such terms as "if—then," "and," "or," "not," "any," "such as," "identical with," etc.; as well as "one," "two," "as many," "more," "twice as many," etc., are thickly sprinkled all over the pages of our geometries. Some of these must, in any system of logic, be accepted as indefinable. When, therefore, we speak of the two indefinables of a system of geometry, we mean the two *peculiar* indefinables, assumed in addition to the omnipresent concepts of logic.

To guard against misplaced verbal criticism, it may be added that there is an interpretation of geometry, according to which its "indefinables" are really defined—namely, by the "axioms," or "postulates," from which the demonstrations of the science proceed. The argument of the present chapter is unaffected by these considerations.

³ The usage of this term is unfortunately inconsistent. In the following pages it will be used to denote the type of geometry for which measurement is a wholly secondary matter, but which assumes from the outset—as projective geometry does not—the conception of the order of three points in a straight line. Cf. B. Russell, *The Principles of Mathematics*, p. 382 and Chap. XLVI; L. Couturat, *Les Principes des Mathématiques*, p. 142 and pp. 159ff.

collinear." In common language this relation would be expressed by saying that the three points were in one straight line. The same mode of expression may, indeed, be used by the mathematician; but he has then three indefinables instead of two: namely, "point," "line" (or "straight line"), and "to be in." It is simpler to start with "point" and "collinear," and to define the straight line as a peculiar set of points; that is to say, as the set of all the points that are collinear with two distinct points, together with the two points themselves.

We may pause here to emphasize the fact that collinearity is a relation between *three* points. The relations with which logic has for the most part dealt are relations between two terms; and from this fact a wide-spread prejudice has arisen, to the effect that all relations are confined to two terms. But the case of collinearity itself is clear evidence to the contrary. *Any two* points are connected by a straight line; but when this is true of three points it constitutes a certain definite relation between them.

It is true, that instead of regarding collinearity as a relation between three points, we may equally well regard it as a *quality of a collection* of three points.⁴ That is, of course, because the relation of collinearity is symmetrical. If *A* is collinear with *B* and *C*, it is collinear with *C* and *B*; and furthermore *B* is collinear with *A* and *C*, and *C* is collinear with *A* and *B*. Such a relation can always be regarded as a quality that is predicable of the collection as a totality. Instead of saying that Henry is a cousin of Stephen or that Stephen is a cousin of Henry, I may equally well say that Henry and Stephen are a pair of cousins.

(ii) For descriptive geometry the approved indefinables are "point" and "to be between." This latter is, again, a relation between three points. It would be expressed in ordinary language by saying that one point was in a line with two others, and between them; but in descriptive geometry it is accepted as a simple, inexplicable *datum*.

The between-relation differs from the relation of collinearity in being symmetrical only with respect to two of the three points and asymmetrical with respect to either of those two points and the

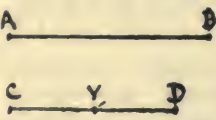
⁴ The properties that we ascribe to things are of two sorts: first, those that we may ascribe to a single thing and, secondly, those that may only be ascribed to two or more things conjointly. "To be brave" is an example of the first sort; "to be a cousin of" is an example of the second sort. These two sorts of properties may, with essential fidelity to tradition, be distinguished as "qualities" and "relations." It should be observed, however, that in accordance with this usage, while "to be a cousin of" is a relation, "to be a cousin of Peter" is a quality; for we may affirm it of a single subject.

third point. If A is between B and C , then it is between C and B ; but B is not between A and C , nor is C between A and B .⁵ Accordingly the between-relation is not interpretable as a quality of the collection of three points. The peculiar position of the middle point can not be expressed in any such way. The relation may, however, be regarded, not as a relation between three terms, but as a relation between two; namely, the middle point and the collection consisting of the other two points.

(iii) Metrical geometry has been less successful than the other two types of geometry in finding appropriate and serviceable indefinables. Metrical geometry is what most of us mean when we use the word without an adjective—the science as set forth by Euclid and his direct successors. In fact the expression “metrical geometry” is etymologically a crude tautology. But the science of space has been so extended during the last century, that its original subject of spatial measurement has become for it an altogether secondary interest. The historical fact remains, that metrical geometry is the original type, and that projective and descriptive geometry are comparatively recent specialized developments of conceptions first reached by the metrical mode of approach. The less satisfactory condition of the foundations of metrical geometry must, therefore, be deeply regretted by those who wish to understand the place of geometry in human experience.

Since the time of Leibniz, the generally preferred indefinables for metrical geometry have been “point” and a *class of relations* between two points, called “distances.” It is assumed that the same relation of distance that subsists between two points may also subsist between two other points. As a matter of fact the distance between two points never appears in a proposition except as it is in some way compared with the distances between other points.

The unsatisfactoriness of these indefinables depends upon the awkwardness of the procedure by which it is necessary to introduce the notion of one distance being *greater than* another distance. The following device is as simple as any:


 “The distance AB is greater than the distance CD ” means that there exists a point Y , such that the distance CY is the same as the distance DY , and such that there is no point X such that the distances AX , BX , and CY are all the same.⁶

⁵ Sometimes a certain class of exceptions is admitted: it is assumed that any point is “between” itself and any other. (In the same way it may be assumed in projective geometry that any point is collinear with itself and any other point.) This is to be regarded as a merely verbal matter, to be determined by convenience of terminology.

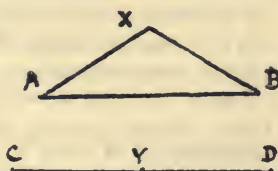
It is to be observed that this device does not enable us to define the relation "greater than" except on the implied assumption that space is of at least two dimensions. If we limit space to a single straight line, then, if the distances AB and CD are not identical, AB is *necessarily* greater than CD by the above definition; for, on that supposition, if the distances CY and DY were the same, we could *never* find a point X such that AX , BX , and CY were identical.

If we assume that space is of only one dimension, we can, indeed, define the relation "greater than" with reference to any two distances that are *commensurable* with each other. We say, for example, that if the distances AB , BC , CD , and DE are all the same, then the distance AE contains the distance AB four times. If, in the same way, the distance XY contains AB three times, then, since (in the arithmetical sense of the terms) four is *greater than* three, we say: " AE is greater than XY ."

How unfortunate it is that the relation "greater than" should be made to depend upon multidimensionality or else upon commensurability, is seen from the consideration of *time*. Time we are in the habit of conceiving on the analogy of the straight line, as a space of one dimension. Now, in the case of time, we make no scruple to assume that one interval may be longer than another, altogether independently of the question of commensurability. Why should we have to look outside of the straight line itself in order to give a general meaning to the proposition that one of its segments is greater than another?⁶

When we reflect upon the matter, we can see that there is at

⁶ This figure illustrates the fact that if AB were less than CD a point X that satisfied the given requirement could easily be found. It must, however, always lie outside of the line AB .



⁷ It might be supposed that this mode of definition could be extended to incommensurable distances by the method of limits; but this appears to be impossible. One can not even give a meaning to the expression, " B lies between A and C ," unless AB and BC are commensurable.

⁸ It is, of course, possible to assume "greater-than" (in the sense of a relation between two distances) as a third geometrical indefinable, and this is sometimes, openly or covertly, done. But such a procedure, *if it is not unavoidable*, has this demerit: it puts a limitation upon the understanding of the subject-matter of the science—it effectually prevents a maximum clearness. It is true that a high degree of simplicity is thereby facilitated; but in the study of the principles of mathematics simplicity is too dearly purchased at the expense of clearness. Each additional undefined term that might have

bottom a very good reason why the distance-relation makes a very poor conception upon which to base the science of spatial measurement. As we have already remarked, one distance-relation never appears alone in a proposition, but only in comparison with another distance-relation. Geometry takes cognizance of no peculiar properties of any particular distance. Hence the distance between two given points, when it is considered by itself, apart from any relation to the distances between other points, is as nearly as possible an *empty* concept.

This may, perhaps, be made clearer by an illustration. Suppose a man cast ashore upon a desert island, where among the useful articles that he has saved from the wreck he finds a pair of compasses and a straight-edge, but no yard-measure and nothing of any known ratio to the yard. Can he reproduce the yard? He can not. The yard, like every other measure of length, is a *conventional* unit. To be a yard long means to be just as long as something else accepted as being a yard long. If a standard of reference is wanting, the yard disappears.

The suggestion thus arises that for the construction of a metrical geometry the fundamental relation ought to be a relation between *four* points, or, if you please, between two "pairs" of points—collections of points consisting of two each.⁹ One such relation is "to be just as far apart as." Another is "to be farther apart than." The suggestion has been dispensed with means so much more superficiality—it means that the labor of analysis that ought to be done has not been done.

In this connection the remark may be made, that the number of assumed axioms—provided these are mutually independent and are sufficient to prove what they are expected to prove—is almost entirely indifferent. If anything, the greater number of axioms is preferable, for this may show a finer analysis; but this does not appear to be necessarily the case. There is a good deal of popular misunderstanding on this point, because of the fact that so much endeavor has been directed by mathematicians upon the elimination of *superfluous* axioms—axioms that could really be proved from the remaining assumptions. It needs to be clearly understood that if none of the axioms of a given set is superfluous—if they are all mutually independent—their number is, generally speaking, a matter of no importance.

⁹ To be perfectly precise, one must admit the limiting case in which the "pair" consists of but one and the same point "twice considered." This, however, is a topic that belongs to general logic. The pair "*A* and *B*" may there be defined as the class (or collection) of which *A* is a member and *B* is a member, and which has no other members. It is not specified, and it is not implied, that *A* and *B* must be distinct.

The classical geometry conceived of this limiting case in a characteristically different way. Instead of "considering the same point twice over," it admitted *coincident* points. There is no reason why we today should not adopt a similar procedure; and for the purposes of this study there would be some advantages in doing so. I have preferred, however, to conform to the prevailing fashion as far as possible.

than." There are several reasons for preferring the latter, of which only one is strictly pertinent in this place; namely, that the choice of the former amounts to practically the same thing as the assumption of distance itself as an indefinable class of relations.¹⁰

One other reason, however, is of too great methodological importance to be denied mention. The assertion of a relation such as "to be just as far apart as" is generally based, not on positive evidence, but on the absence of negative evidence. If we are dealing with physical objects, and A and B are farther apart than C and D , we can in many instances attest this fact with a high degree of assurance. As, however, this relation *approaches* the condition where A and B are just as far apart as C and D , the certainty of our judgment decreases; and a condition is finally reached where all that we can say is that we see no further difference. Generally speaking, propositions asserting the relation "to be farther apart than" are of a higher degree of probability than those asserting the relation "to be just as far apart as." What, therefore, the proposition, that A and B are just as far apart as C and D , actually *means* in the system of science is that, within the limits of our observation, A and B are not farther apart than C and D , and C and D are not farther apart than A and B .

It is very striking, how, when the relation, "to be farther apart than," is taken as fundamental, the difficulties dwindle away. This can best be shown by exhibiting a specimen series of definitions. It is true that, from the mathematical standpoint, the definitions that occur in mathematics are matters of merely verbal significance. They are statements that certain newly presented symbols may, at will, be substituted for certain combinations of previously presented symbols. Nevertheless, it is in the definitions that the analysis of the complex subject-matter of the science most clearly appears.

The series of definitions given in the following pages extends as far as the introduction of the notions which are fundamental to projective and descriptive geometry. Farther than that we need not go; for the "defining-value" of these notions is well known, and that of our own indefinables will have been shown to be at least

¹⁰ It may be recalled that in Professor Veblen's well-known account of the foundations of elementary geometry two indefinable relations are employed. In addition to the relation of *congruence*, which is essentially the same as "to be just as far apart as," he introduces the relation of *order* between three points, which is essentially the same as the between-relation. (I say "essentially," because in each case there may be an unimportant technical difference.) The resulting system is, therefore, not purely metrical, but is a mixture of metrical and descriptive elements; and it labors under the disadvantage which was pointed out in a previous note.

as great. Our task, then, will be to make clear what, from the metrical standpoint, is meant by the *order of points in a straight line*.

INDEFINABLES

I. Point.

II. To be farther apart than.

Points are to be represented by capital letters. Different letters need not indicate distinct points.

DEFINITIONS

I. If A and B are not farther apart than C and D , and C and D are not farther apart than A and B , then A and B are said to be *just as far apart as C and D* .

II. The *distance AB* is the class of pairs of points that are just as far apart as A and B .


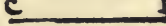
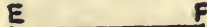
This definition calls for some comment. Instead of defining a distance as a *class* of pairs of points, we might define it as the *distinguishing property* of that class. That is to say, we might define the distance AB as the property of being just as far apart as A and B . This would be in closer accord with our common-sense notion of distance. But, as students of logic well know, propositions about classes, and propositions about the distinguishing properties of classes, run parallel to each other. The two sorts of propositions represent two different ways of regarding the same facts—in *extension* and in *intension*, to use the traditional terms. It is the general custom of mathematicians to prefer the extensive treatment; and there is no reason why we should do otherwise.

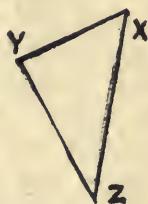
The definition of a distance as a class has this consequence: that we shall have to speak of *the same distance*, not of *equal* (or *equivalent*) *distances*. According to our definition, if A and B are just as far apart as C and D , the distance AB and the distance CD are identical. If we had chosen to define a distance as a property, the case would be different. The property of being just as far apart as A and B is not identical with the property of being just as far apart as C and D . The relation between these properties is that they *imply each other*, or are equivalent.

It is further to be remarked that the distance AB may be defined as the (symmetrical) relation subsisting between *two* points, by reason of the fact that they are just as far apart as the points A and B . This definition has nothing in particular to recommend it. But it is worth while to reflect upon it a little, because of the way in which it brings to the surface the unfitness of the two-term distance relation to serve as one of the bases of geometry.

III. If A and B are farther apart than C and D , the distance AB is said to be *greater than* the distance CD .

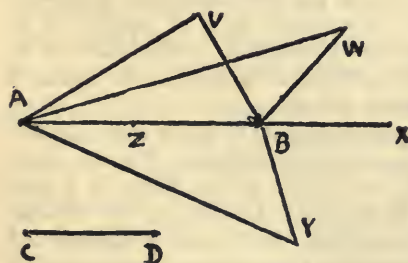
Here it is to be observed that the phrase "to be greater than" is defined in a particular technical sense: namely, as it is applied to distances. In arithmetic a relation having the same name is defined with reference to real numbers; and it is one of the first tasks of metrical geometry to justify this ambiguous use of the words by showing that its own greater-than relation has the same formal properties as the arithmetical relation. For it is on this identity of the formal properties of the arithmetical and the geometrical greater-than, that the theory of spatial measurement rests.

IV. The distances AB , CD , A  B , and EF are said to be *compatible*,  D , if there exist the points, X , Y , and E  F , such that XY is the same as AB , YZ is the same as CD , and XZ is the same as EF .



This notion of compatibility is the only one in the present set that is not familiar to common sense. We do not absolutely need it here, and it is introduced only because it enables us to define in relatively simple terms what is meant by the sum of two distances.

V. The *sum* of the distances AB and CD is a distance compatible with them, and greater than any other such distance if such there be.



In the figure let BV , BW , BX , BY , and BZ all be the same as CD . Then (by Definition IV) AV , AW , AX , AY , and AZ are all compatible with AB and CD . One of the five, namely AX , is greater than any of the others; and it is, in fact, greater than any other distance

compatible with AB and CD . We call it the sum of AB and CD .

Here we must make the same remark about the use of the term "sum" that was made above with regard to the term "greater than." From arithmetic we know what the "sum" of two real numbers means. Metrical geometry has to show that the sum of two distances has the same formal properties that belong to the sum of two real numbers. This is very easily accomplished.

VI. If A , B , and C are distinct, and AC is the sum of AB and BC , B is said to be *between* A and C .

VII. If either A is between B and C , or B is between A and C , or C is between A and B ; A , B , and C are said to be *collinear*.

VIII. The *straight line* AB is the class of points collinear with A and B , together with A and B .

Attention must now be called to a few characteristics of this series of definitions. In the first place, the definitions are exceedingly simple. If the reader will glance over the whole series of eight, he will see that they follow one upon another in the most natural and obvious fashion. When once the proper indefinables are chosen, the definitions are almost inevitable—not because others to take their place can not be found,¹¹ but because it would require a good deal of ingenuity or of industry to think of them, while these fairly suggest themselves. The only feature that smacks in the least of artificiality is the notion of “compatibility,” and that only on account of the novel term that is used. The problem was, how to combine two distances so as to get their sum. Is not the obvious answer that the outside points shall be as far apart as possible? At any rate, if the definitions are not inevitable, they are at least easy—so easy that the whole set can be grasped by the mind almost without effort, in a single movement of the attention.

If the reader has studied projective geometry, and in particular the projective definition of distance, he will not hesitate to admit that the metrical definition of collinearity is incomparably simpler.

¹¹ An example of an alternative method is suggested by Professor C. V. Huntington, in *Mathematische Annalen*, Vol. 73, pp. 529f. Professor Huntington takes as his indefinables “sphere” and “is contained in.” A “point” is defined as a sphere in which no other sphere is contained. “The point B lies between the points A and C ,” is then explained as meaning: No sphere X exists, in which A and C are contained, but not B .

In terms of our own indefinables, a sphere is a class of points whose distance from a certain point is not greater than a certain distance. For one sphere to be contained in another, means that every point of the former is a point of the latter. Accordingly, Professor Huntington’s definition of the between-relation becomes: No point X exists such that there exists a distance YZ , such that BX is greater than YZ , and neither AX nor CX is greater than YZ . This is obviously more complex than is necessary; so we may put it: No X exists, such that BX is greater than both AX and CX .

Professor Huntington’s device suggests others that to him, with his peculiar indefinables, were not available. For example, “ B is between A and C ” may be explained: If X exists such that AX is the same as CX , this distance is greater than BX . Or we may first explain “ A , B , and C are collinear” as meaning: No X exists such that AX , BX , and CX are the same. And we may then distinguish the outer points, say by their greater distance from each other.

In any case, we may proceed to explain “ AB is the sum of CD and EF ” as meaning: X exists such that it is between A and B , and AX is the same as CD , and BX is the same as EF .

In the second place, the definitions imply nothing as to the number of dimensions in space. Space may equally well have one, two, three, or more dimensions, and these definitions will still hold good. Substitute the word "instant" for "point," and "interval" for "distance," and drop the last two definitions as superfluous, and the account applies perfectly to time. The like is true of the metrical principles which we shall shortly have to consider: they are all equally applicable to space of any number of dimensions.

It has sometimes been held by mathematicians that projective, descriptive, and metrical geometry presuppose one another in that order: that projective geometry is logically prior to descriptive geometry, and both of these to metrical geometry. Logicians, of course, are not at present inclined to take much stock in the notion of logical priority, except as it is conceived with reference to some particular deductive system. It has been found that there is a surprising amount of freedom in the choice of indefinable terms and indemonstrable propositions—how much we do not know. What is logically prior in one construction may be logically posterior in another. Of an absolute order of priority we know nothing.

But for our present purpose, since we have in view an inquiry into empirical foundations, the really important question of priority as between the three types of geometry is as to which gives the simplest conception of the nature of space. In this respect, metrical geometry has an incontestable and enormous advantage. The direction taken by the history of the science is here the path of least resistance. Starting from the theory of spatial measurement, we find spatial order comparatively easy to understand. Starting from the arrangement of points in lines, we find spatial measurement an intrinsically and unavoidably abstruse subject.

Our first task is accomplished. We have seen what, in metrical terms, a linear order means. But the meaning of our assumed indefinables is itself set forth in the postulates which we adopt, and becomes more and more explicit as the consequences of these postulates are successively unfolded, that is to say, as the system of geometry is constructed. It is far beyond the purpose of the present study to attempt the construction of even the foundations of a geometry. It is, indeed, not difficult to set forth a list of principles—only about sixteen are needed—from which the Euclidean geometry can be deduced. But to provide and insure the mutual independence of the principles, so that they may serve as the postulates of a mathematical system, is a task calling for a very special competence and training.

However, I have thought it well to present in this place a state-

ment of certain metrical principles, which, so far as they go, are independent of one another, and which are sufficient as premises for the demonstration of the most important properties of the between-relation. I trust that they will be of service in throwing light upon the empirical considerations that are to follow.¹²

Points, as before, are denoted by capital letters, and different letters need not indicate distinct points.

I. If A and B are farther apart than C and D , C and D are not farther apart than A and B .

In other words, "to be farther apart than" is an asymmetrical relation.

II. If A and B are farther apart than C and D , and E and F are not farther apart than C and D , A and B are farther apart than E and F .

In combination with the preceding, this assures us that if A and B are farther apart than C and D , and if C and D are farther apart than E and F , A and B are farther apart than E and F . That is to say, "to be farther apart than" is a *transitive* relation.

It also follows that the relation "to be just as far apart as" is transitive.

III. If A is not identical with B , then, for all values of X , the distances AB and XX are distinct.

This is used in demonstrating the proposition that the distance XX is constant, and is in fact the *zero-distance*; that is to say, that if XX be added to any distance YZ , the sum is YZ .

IV. If A , B , C , and D be each any point, X exists such that BX is identical with CD , and AX is the sum of AB and CD .

This assures us that any distance and any distance have a sum. It also assures us of a part of what we mean by the "uniformity" of space.

V. If AC is greater than AD , and BC is the sum of BA and AC , BC is greater than BD .

From this it follows that if AC is greater than AD , and XY is any distance, the sum of AC and XY is greater than the sum of AD and XY .

VI. If A and B are not identical, and if BC is not greater than BD ; and if AD is the sum of AB and BD , and if AC is the sum of AB and BC ; then BD is the sum of BC and CD .

This provides that any two distances shall have a difference. The last three principles, or their equivalents, are necessary to show that

¹² It should be remembered that we assume from general logic that the relation of co-membership in a pair is symmetrical with respect to the two members. Accordingly we assume without question that "the point A and the point B " means the same pair as "the point B and the point A ."

the relation "to be greater than" is strictly analogous to the greater-than relation between real numbers.

Assuming these six principles to be true, we can easily prove the associative law for the addition of distances. (The commutative law is in this system a mere identity.) We can also prove the following series of propositions (using the expression (XYZ) to mean " Y is between X and Z "): :

(i) If (ABX) and (ABY) , and BX is identical with BY , X is identical with Y .

(ii) If (ABX) and (ABY) , and BY is greater than BX , then (BXY) and (AXY) .

(iii) If (AXB) and (AYB) , and AX is identical with AY , X is identical with Y .

(iv) If (AXB) and (AYB) , and AY is greater than AX , then (AXY) and (XYB) .

(v) If (XAB) and (ABY) , then (XAY) and (XBY) .

(vi) If (AXB) and (ABY) , then (AXY) and (XBY) .

And from these six propositions we may derive the following generalization, which establishes the complete determination of the straight line by any two of its points:

If A, B, C , and D are distinct, and if A, B , and C are collinear and A, B , and D are collinear, then A, C , and D are collinear.

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A METAPHYSICIAN'S *PETITIO*

OF those who interest themselves to-day in the general problem of the method of experience, the greater number approach the subject in the light of experience alone. That is to say, they criticize experience without *a priori* presuppositions as to its nature. For example, they observe the processes of scientific investigation as a parent observes the breathing of her child or a physiologist the functions of the brain. They examine the industrial and commercial activities of human beings, their political strategies and recreative sports, with the meticulous care of a psychologist interested in the phenomenon of fatigue. The artistic tastes, the religious rituals and the poetic creations of people are as interesting to the methodologist as the process of metabolism to a biologist. Above all he hugs to his bosom the transformations of attitude and emotion through which reflective life passes out of one and into another of these phases of experience, believing that therein especially is ultimately to be found the synthesis that endows civilization

with integrity, the filament of spirituality that binds together the associated life of the world.

The methodologist postulates nothing but this teeming life, and that he approaches on his knees, as becomes the student of it. He does not pretend to know *a priori* that it is all a symphony played on the motifs of matter and mind: neither does he presume to know prior to observing the fact that it is not: he will see what he shall see, and to report what he has found he will use whatever conception-aids the subject beautifully fits as a glove fits the hand.

What he everywhere finds is customs and the straining of strong men to alter them, an act that is both habitual and accommodative, or rather a system of such acts rooted in the past and moving forward into an as yet problematical future. Nowhere does he find absolute gaps in the moving whole: on the contrary, human experience appears to be a processional continuum. Individuals succeed, or they fail, in utter obliviousness to the disparity between a substance that thinks and another that is extended. If one's hates are accompanied by right-hand spiral motions of the molecules of his brain and his loves by left-hand spiral motions, the whirligigs are amusing only; one is intent on his objectives, alike whether these be material or spiritual.

The methodologist notes these facts, and he too feels indifferent to metaphysical dualisms. What abstractions, however hoary, can compare in fascination with the youth and vigor, the concrete richness and teeming verve of life's artistry? In reporting his findings, the methodologist must use the language of logic, psychology and perhaps cosmology; but when he speaks of bodies he is thinking of a system of habitual activities in process of reformation; when he speaks of consciousness he is thinking of the moment of reformation itself; when he refers to objects he has in mind controlling contents of present experience that mean something not now existent but interesting and to be experienced; when he mentions the future he probably has in mind in most instances, not some distant thing that does not now exist, but the present experience of expectation and purpose that characterizes all real knowing. *Datum* and *ideatum* are not for him pebbles in the loaf of experience but moments in a continuous process.

Now comes one with a metaphysic. "Ah," he notes, "Methodologist speaks of present body and of past or future existences that are not present at all. He is therefore a dualist, probably an interactionist that knows not his own mind." Or, "He denies the existence of what I call consciousness. He is therefore a materialist ashamed of himself, a materialist ashamed to accept the implica-

tions of his own language." Mr. Lovejoy thus finds pragmatism materialistic. We do not presume to speak for all pragmatists: just possibly some of them would not assent to our present thesis: but the theory of knowledge of which Dewey and his pupils are the living exponents in this country is fundamentally a methodology, not a metaphysic, and reading metaphysical meanings into their words is a *petitio* of obvious character.

In an article in this JOURNAL (Vol. XIX, p. 6), Lovejoy is replying to an article of Bode and quotes from the latter, "A careful inventory of our assets brings to light no such entities as those which have been placed to our credit. We do not find body and object and consciousness, but only body and object." We may suppose Bode's meaning to be, "We find only organized habitual responses in process of reformation and a controlling content of present experience that means something-to-be-found-or-achieved." By way of criticism Mr. Lovejoy solemnly warns the reader that this is materialism and proceeds to refute materialism by observing, "Upon the materialistic hypothesis practical reflection itself is nothing but a motion of matter; if 'bodies and (physical) objects' are the only factors involved in 'intelligence,' it should be possible to describe the phenomenon called 'planning' wholly in physical terms—*i.e.*, in terms of masses actually existing, of positions actually occupied, of molar or molecular movements actually occurring, *at the time when the planning is taking place.*"

Thus by following the association of ideas in his own mind, by jumping with certain associations of the word "body," the metaphysician passes out of the universe of pragmatic methodology into the universe of mechanistic cosmology with an alacrity as amazing as it is alogical. Incidentally, let it be noted, as evidence of Mr. Lovejoy's desire that the reader shall follow him closely, that the word "(physical)" in parenthesis is not in the original text of Bode's article at all.

Again, we read on page seven of Mr. Lovejoy's article, "Thus in fixing his attention especially upon 'intelligence' in its practical aspect, the pragmatist is brought face to face with that type of experience in which the empirical presence of non-physical entities and processes is, perhaps, more plainly evident than in any other." If Mr. Lovejoy had written, "that type of experience in which the empirical presence of what a certain metaphysical dualist regards as non-physical entities and processes," we should have no reason to complain of his logic; but in that case there would have been no point to his criticism. Again, on page seven, "He (the pragmatist) is primarily interested, not in the question how we can know an

external, coexistent object, but in the question how one moment of experience can know and prepare for another moment. It is in short to what I have elsewhere named intertemporal cognitions that his analysis is devoted; it is by man's habit of looking before and after that he is chiefly impressed. Now to look before and after is—as my previous paper pointed out—to behold the physically non-existent.”

As a matter of fact, intertemporal cognition, as Mr. Lovejoy means the phrase, is not at all what the methodologist is supremely interested in. Intertemporal cognition is cognition of a specific type, such as, “Yesterday I made an engagement that I shall fulfill tomorrow”; and the methodologist is far from being so naïve and ineonsequential as to say that all intelligence is cognition of this type. On the contrary his conception of cognition holds true of this type of cognitions, if it holds at all; and Lovejoy simply begs the question he is ostensibly discussing when he thus states, or pretends to state, the methodologist's doctrine. What the latter is emphasizing is a fact noted, we believe, by every good book on psychology written within the last forty years, *viz.*, the fact that all cognitive activities are teleological functions. Lest anyone construe teleology transcendently, as has been done so often, the methodologist describes teleology in terms of actual experience, and that involves mention of the time consumed by any process or function of actual experience. There exists, however, a vast difference between the time consumed by a cognitive function and the time content of intertemporal cognitions, a difference that every psychologist recognizes. The former is part of the form of cognition in general, the latter is content in a specific class of cognitions. Mr. Lovejoy confuses the specific cognition of temporal relations, the habit of looking before and after, with the prospective, purposive character of all cognition.

Of course the methodologist means that temporal cognition is as purposive as any other type of cognition. Observation of the time cognitions of small children has convinced the present writer that the child's first experience of time relations is his experience of enforced waiting while his nurse is coming to relieve his discomfort or bring him food. Especially when he awakens before the time for his feeding, and lies there suffering while the hands of the clock move slowly to the hour, he is becoming conscious of duration. When children first begin to talk, their judgments of futurity take on a semblance of accuracy and completeness months before their judgments of pastness do. Tomorrow's picnic excursion and the experiences of next Sunday, when the little one will be taken to

Sunday School, are fairly definite concepts long before he has any definite idea of what happened yesterday; and it is most interesting to observe how very slowly the conception of the day before yesterday begins to function in his experience. From the very start his time experience is thus relative to his needs and desires, while clock-time, the time of the mathematician, the even flowing continuum of duration, is a late abstract construction of social experience and is everywhere relative to the need to measure or otherwise conceive time, *i.e.*, to the need of organizing "the present" in a conceptual control of present activity. Quite contrary to Mr. Lovejoy's assertion, we should say the pragmatist is logically committed to a more continuous and profound interest in the past than is any other living philosopher. For history is a study of "how man came to be as he is and believe as he does,"¹ while conceptions of what man is and believes are thoroughly teleological. An historical consciousness, a consciousness that history is here and now in process of being made, is the first essential of intelligence. It is the first prerequisite of effective participation in community life. Such is the pragmatist's emphasis on knowledge of the past.

Mr. Lovejoy finds that Bode, whose article is in part a reply to an earlier one of Lovejoy himself, does not stick to the point. "Throughout most of his paper, then, Professor Bode, instead of looking at the evidence offered for this conclusion, which he ostensibly rejects, appears to fix his gaze on another object altogether." No wonder! Two men standing back to back and gazing at different points on the horizon say, the one, "That mountain is wooded to the top," and the other, "No, that mountain is bald." It is amusing to read in Lovejoy's article, "After careful study of his paper, I remain in some doubt whether he holds that pragmatism implies materialism or not." He need not be in doubt as to this point, for Bode distinctly writes, "The question what is real is absolutely sterile." The real problem, to Bode, is the problem of method. In his most metaphysical mood he would probably name his doctrine neither idealism nor materialism, neither intellectualism nor empiricism. He would probably name it *experiencism*,—if only there were such a word. As for realism, if that can be said to consist in treating a subject matter in a consistently objective manner without *a priori* presuppositions, he is a realist. However, as a science of the method of experience pragmatism is privileged to abstract from the problems of metaphysics, except as the metaphysician's own method of procedure presents itself as a problem.

It would be a work of supererogation to trace in detail the

¹ James Harvey Robinson.

many instances of this fallacy of begging the question in Mr. Lovejoy's *Pragmatism versus the Pragmatist*, an essay that appeared in a volume entitled *Critical Realism*. Here, however, it appears in greater variety than in the article referred to above. Here, for example, Mr. Lovejoy flings question-begging epithets about with redundant profusion. Here the rule of some lawyers, that when you have no case it is good to abuse the opposing counsel or their brief, is conscientiously followed. Here a fictitious question which is in fact a case of many questions, the presumption of proposing to decide what kind of a metaphysician the pragmatist is, is unblushingly propounded. The work of deliberately trying to make the pragmatist say things he never meant to say, of trying to make him say things that Mr. Lovejoy thinks he ought to have meant to say, and of then pretending to evaluate his doctrine by the fictitious and often fantastic results, is here arduously pursued; but it is not what one would call helpful criticism. It is as futile a procedure as trying to decide how many angels can skip around on the point of a pin.

For example, on page 46, after quoting from Dewey a statement of the pragmatist's notion of experience as "a matter of functions and habits, of active adjustments and readjustments, of coördinations and activities, rather than of states of consciousness," the article continues, "Here we have an explanation which seems to swing our interpretation of the pragmatist's position wholly over to the realistic side—and indeed to the neo-realistic side. He appears in this passage as an ardent adherent of what has been named . . . 'pan-objectivism'—as one who denies the existence of states of consciousness altogether." As if the words of Dewey could logically be construed to be a denial of the existence of states of consciousness in the pragmatist's sense of the word! As if indeed the first essayist of both *Studies in Logical Theory* and *Creative Intelligence* meant to say anything of the kind! Pan-objectivism affirmed one term of a traditional epistemological dualism, that of consciousness and the object, and tried to deny the other term, tardily reckoning with the fact that the terms of that dualism must be accepted or rejected together. It is absurd to say that Mr. Dewey is doing that, and yet the article in question proceeds for some pages in a fatuous attempt to criticize his theory as though he were. We can be sure that Dewey rejects Lovejoy's conception of consciousness; but it is presumptuous to assert, without even attempting to state the pragmatist's conception, that that is a denial of the existence of states of consciousness altogether.

The confusion already referred to of time-judgment with the prospective and purposive character of all judgment is even more

elaborate in the article we are now discussing. It is here a veritable dust-cloud enveloping the entire argument. "A more significant error, and one, as I think it possible to show, which is inconsistent with a true instrumentalist logic, is Mr. Dewey's Limitation of the 'knowledge-experience' *exclusively* to forward-looking thoughts," (p. 52). "This formula . . . manifestly tells only half the story, at best. It ignores the patent empirical fact that many of our 'meanings' are retrospective—and the specifically 'pragmatic' fact that such meanings are indispensable in the planning of action," (p. 53). "The pragmatist . . . manifests a curious aversion from admitting that we have knowledge, and 'true knowledge,' about the past. I have already cited from Mr. Dewey a formal definition of 'knowledge' which excludes from the denotation of the term everything except judgments of anticipation" (p. 63). The citation referred to is, I presume, the second note on page 52. But all of this exposition of instrumentalistic pragmatism misrepresents its subject, owing to its author's failure to recognize the difference between the teleological reference and effect of every genuine cognition and the mathematical time in which it transpires.

An illustration may make the matter clear. A young man is at work in the same room with me: he raises his head and looks about: he is thinking, as indeed I am, that the room is close: he notes that the windows are all closed and opens two of them. He first perceived the close air of the room, a cognitive experience based on years of past experience in similar situations, and a cognitive experience that meant for him the need of a livelier circulation of air in the room. He then perceived the closed windows-capable-of-being-opened, rose and opened two of them. To me, looking on sympathetically, the perception of the close air led to the perception that windows could be opened, and that, in turn, referred to events about to be affected by my companion's action. But to him the two perceptions were simply perceptions: they were through and through purposive. He returned to his chair with no consciousness that time had elapsed since his attention was interrupted by organic sensations of stuffiness. What he perceived was (1) the close air of the room and (2) the windows about to be opened; but to me, looking on, both perceptions involved memories of the past and ideas of the future. One need not, unless indeed he will to do so, confuse my onlooker's analysis of the processes of my friend's experience with the actual contents of those experiences; and any one who wills to confuse these two things is deliberately guilty of what might well be termed *the metaphysician's fallacy*. If such an one reads into the methodologist's description of

such experiences his own metaphysical meanings, he is guilty of the metaphysician's *petitio*.

Much is said by Mr. Lovejoy about Mr. Dewey's phrase "present-as-absent" for the purpose of convincing the reader that it denotes a time-cognition; but no student of the psychology of time-cognition is convinced by these many animadversions. The term time-cognition denotes several different sorts of cognition. At the lowest it denotes an immediate sense of duration, of interruption; (2) it denotes the cognition of intervals or periods that must elapse ere the end of a desire is attainable; (3) it denotes a sense of the values of familiar experiences with no necessary consciousness of the pastness of those experiences; (4) it denotes an explicit consciousness of intervals of past experience; and (5) it denotes the highly abstract, prodigiously useful, public thing which we have called clock-time, mathematical time with its evenly flowing continuity marked by the recurring transits of a star, by the flow of sand in an hour glass, by the uniform rate of motion of hands round the dial of a clock, by the mathematical definition of continuous manifolds, and so forth. Until the metaphysical critic of pragmatism recognizes that genuine cognitions may involve any of these meanings of the term, or none of them, his criticisms are not likely to be helpful to the methodologist. The idea that psychology has nothing to say about time-cognition that concerns the metaphysician or the epistemologist is so deeply embedded,—the idea that psychology deals solely with a morass of subjectivity that philosophy is too pure to behold,—that it is difficult for some to understand the viewpoint and method of instrumentalism. Mr. Lovejoy fails to understand not only Mr. Dewey but the whole methodological approach to the problem of knowledge, and to understand that approach is, by your leave, the first indispensable step toward a real logic. Mr. Lovejoy finds the pragmatist to be a subjective idealist, a pan-objectivist, materialist, a dualistic interactionist, and above all an errorist; but the reader will search his criticisms in vain for even an approximately adequate exposition of the doctrine he is discussing.

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BOOK REVIEWS

Proceedings of the Aristotelian Society, 1920-1921. New Series, Vol. XXI. London: Williams and Norgate. Pp. iv + 246.

Part of the strength of the excellent series of papers which make

up the present volume is due to the contributions of the American delegates to the Oxford Congress. Professor W. P. Montague presented before the Aristotelian Society (meeting of December 6, 1920) a paper entitled "Variation, Heredity and Consciousness," embodying suggestions and hypotheses concerning the relation of life and mind to the realm of physical energy. He calls his argument "a mechanist answer to the vitalist challenge." In so obscure a field any hypothesis is worthy of a trial, provided it is at all capable of verification. The present reviewer finds it hard to decide whether or no the subtle analogies to which Professor Montague appeals do present sufficient possibilities of verification. Thus he compares biological variation to vector addition in mechanics, which gives from old elements a sum which is both pertinent and novel. It is a pretty analogy, but who shall say whether it is more? Furthermore, vector addition has already itself given certain mechanistically minded students of physics considerable occasion for perplexity, as for instance, addition of accelerations. And certainly the mechanist philosopher with a single-track mind would be a bit distressed by Professor Montague's remark that "Nature is not stone-blind . . . she is an artist who works as she goes." The next analogy, which claims indeed to be a full identity, is between heredity and higher space-time derivatives, accelerations of accelerations. The comparison is said to illustrate how a great complexity of promised movement can be resident in a single particle, or small group of particles of matter, which group is at the moment apparently quiescent, like an upward thrown stone at the top of its flight. So far the analogy holds good, but the reviewer can not make clear to himself how this explains anything more about heredity. To him, the very conception of an organism, a real unit in nature, going its own way, not merely self-preservative, but using, and in a measure dominating, its environment, seems inconsistent with strict mechanism—though, for that matter, no better explained by the ineffable mysteries of vitalism. In the third part of the paper, Professor Montague again takes up, in modified re-statement, his earlier identification of consciousness with potential energy, an identification, it must be said, of the mysterious with the inscrutable. Yet the comparisons instituted are certainly tantalizing, and leave the reader wondering whether in the future some new road of investigation may not open up through this region—for it is a matter of fact that there are relationships of some sort between energy and thinking, and Professor Montague's guess is not the worst that has been made. Nevertheless, the members of the Aristotelian Society may well have been left with a state of

considerable stress and confusion inhabiting their own tanks of potential energy after the first hearing of this rather bewildering paper.

Professor J. E. Boodin's paper on "Cosmic Evolution" is less disturbing to customary ideas. His discussion centers about the opinions of L. J. Henderson, the physiological chemist (*e.g.*, his *The Fitness of the Environment*), and Henry F. Osborn, the biologist (in his *The Origin and Evolution of Life*). But back of this is a wider philosophic view: "We must learn that the cosmos is the true unit of reality," and further, "There must be an eternal hierarchy of levels in the universe." It would be hard to dispute that statements so general were not in some sense true.

Professor R. F. A. Hoernlé might perhaps also be claimed as an American contributor to this volume. His "Plea for a Phenomenology of Meaning" will receive the endorsement of all students in that subtle region. The reviewer would venture to suggest that Charles Peirce's cryptic classification of signs may best be interpreted as: (*a*) indices, or using what is naturally conjoined with another as the sign of it, as palm-trees in the desert are a sign of water; (*b*) icons, or signifying through resemblance, as a portrait or a map; and (*c*) signs whose original nexus with the thing symbolized has been obscured through use, so that the relation is now arbitrary and so needs an interpretant "who remembers what it meant." I point with my finger, it is an index; I draw a picture in the air to convey my meaning, it is an icon—in either case the whole world understands; I speak a word, it is what Peirce calls a symbol, and only my own people can interpret me. This third class is doubtless rather ill represented by the word "symbol." Professor Hoernlé is well advised in again calling attention to the distinction, so notable in the case of language, between the indicative and the expressive function of signs.¹ Perhaps the third class above could be revised, still with genuine regard to Peirce's own intention, to include all those signs whose most marked characteristic is this marriage of expression of intent and designation of fact. Language is here the typical case. To the extent to which the dictum is true—and it is only partly true—that "the real is particular, but thought is of the universal," this third class is also the marriage of the universal and particular. Indices move in the realm of particulars only. You can make general statements about indices, but each several index is, as such, individual and unique in itself and

¹ The author leaves one perplexed whether his terminology follows Husserl or Meinong here (p. 85, note). Surely Meinong's usage is preferable: I *express* my own opinions and feelings, I *indicate* or *designate* an external fact—and every sentence I speak does both at once.

in its reference. Icons are indeed in the realm of the universal, for a portrait designates an individual only in so far as that individual has ceased to be unique and is duplicated in the portrait itself. But the user of pictures does not clearly discriminate the universal, and picture language or imitative gesture is therefore but the beginning of true language. In true language the universal and the particular have each their distinctive part. Every dictionary word stands for a universal, yet through language we do manage to discuss the particular facts of this particular world round about us. But the other aspects of language must not be forgotten either, if we are to have an adequate theory. Language is, as Professor Hoernlé well insists, a double revelation; my language is a revelation of the world I know, but also it is a revelation of me. On the other hand, let us not forget that language is social, it is a revelation to somebody and needs an interpreter. It brings minds together, but it leaves them curiously isolated. For what does really pass across? Black marks visible on paper; quiverings of the air. Out of such things we each of us, a lonely worker, build a world, wherein we nevertheless meet our fellows and come to a knowledge of self and of others. Professor Hoernlé is right in saying we need to study these queer facts more closely.

Perhaps the reviewer, through personal interest in the problems raised, has given too much space to what our American delegates told the English about philosophy. Certainly he read with more than usual interest certain of the other papers, notably the Symposium on "The Character of Cognitive Acts." The most striking proposition here is that of Mr. G. E. Moore, to the effect that in all cognition, however simple, a particular, as for instance a sense datum, is subsumed under a universal, and that there is no other characteristic, such as the existence of a knower or an act of knowing, which is thus uniformly found. This thesis suggests that Mr. Moore is working towards a new theory of mind, and we await with interest its further development. The other symposium contributions offer little that is new, though they are acute and hold the attention.

The reviewer was less impressed by Dean Inge's Presidential Address, "Is the Time Series Reversible?" than he usually is by what the Dean writes on philosophy, though no one could help being amused by the parting shot at Einstein, "I feel in my bones that this prophet of relativity is not likely to be a true friend to Platonism." Mr. C. A. Richardson, in "The New Materialism," expresses his distaste for most of the New Realists, because they have done away with what a certain sophomore student of philosophy once called "the myself part of me." If the present reviewer got little

out of Miss Oakeley's paper on Professor Driesch, this is probably the reviewer's own fault, though it may be partly attributable to Professor Driesch.

There remain two logical papers. That by Mr. F. C. S. Schiller, "On Arguing in a Circle," is one of his chronic attacks on the Absolute, but it will probably awaken neither the Absolute nor his minions. Mr. Schiller has never equalled elsewhere his one really admirable logical paper, his contribution to Singer's *Studies in the History and Method of Science* (1917). Miss Dorothy Wrinch contributes a somewhat over-ambitious paper, at least as regards its title, "On the Structure of Scientific Inquiry." It contains many good things in matters of detail. Especially interesting is her treatment of what she calls "true analogy," or identity of form of solution in problems from otherwise different fields. One earlier passage deserves quotation in full. "The domain of logic in science is overwhelmingly wide and correspondingly difficult. No student who has any knowledge of the development of science can deny this. And yet the paramount importance of logic is very seldom realized and the study of it is quite often avoided and only infrequently undertaken by those who seek to make contributions to our knowledge of the world. Professor D'Arcy Thompson in the wonderful epilogue to *Growth and Form* (1917) hints at the æsthetic glories of such a treatment of the world, in words which are full of hope and encouragement, and should earn for him the gratitude of all logicians."

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JOURNALS AND NEW BOOKS

SCIENTIA. January, 1922. *Les sciences grecques et leur transmission. I. Splendeur et décadence de la science grecque* (pp. 1-10): J. L. HEIBERG (Kjöbenhavn).—Rapid historical sketch of Greek science. *The Origin of Binary Stars* (pp. 11-22): J. H. JEANS (Cambridge, England).—Concludes that some binaries are due to fission, others to independent nuclei in an original nebula. Interesting for its exposition of the methods by which these results were reached. *La contribution que les divers pays ont donnée au développement de la biologie* (pp. 23-36): MAURICE CAULLERY (Paris).—Largely a comparison of German scientific work with that of other countries, claiming to find in Germany excellent organization of research, but methods inclining towards a twisting of facts to fit *a priori* theories. *La question sociale* (pp. 37-46): VILFREDO PARETO (Lausanne).—Surveys the history of the conflict of social classes and

the problem of property, a many sided but rather confused summary, that hardly does its author justice. *La paix est-elle une paix anglo-saxonne?* (pp. 47-56): EDOUARD GUYOT (Rennes).—How the difference of interests has led France and England apart since the war—an interesting French view of English policies. *Les effets de la guerre sur la proportion des sexes dans les naissances* (pp. 57-62): F. SAVORGNAN (Messina).—The author takes it as proved that in the countries hardest hit by the war, the proportion of male births increased. He attributes this to the diminution of total births, with its resultant better condition of the mothers, so that fewer males were still-born. *Reviews of Scientific Books and Periodicals.*

Endara, Julio. José Ingenieros y el Porvenir de la Filosofía. Second edition. Buenos Aires: Agencia General de Librería. 1922. Pp. 100.

Rueff, Jacques. Des Sciences Physiques aux Sciences Morales: Introduction a l'étude de la morale et de l'économie politique rationnelles. Paris: Félix Alcan. 1922. Pp. xx + 202. 8 fr.

NOTES AND NEWS

RESPONDING TO THE STIMULUS

To the Editors of the JOURNAL OF PHILOSOPHY:

The only reason I have to offer for taking the liberty to reply to Dr. Hunter's letter to the anti-behaviorists (in the issue of May 25), though it is together with a score of others that my name appears on his list, is to inform him that there are more than two behaviorists in this world, as I hope to show in my forthcoming little book, *Psychology and Behaviorism*; and that in his hunt for what appears to him an *avis rara* he has allowed some of the best representatives of the species, like E. B. Holt, E. A. Singer and Max Meyer, perhaps too B. Bode and Mrs. De Laguna, either to slip in among the antis or to elude his aquiline eye altogether.

I heartily agree with him in his refusal to recognize the new systems of behaviorism that are continually being put on the market as genuine products, but if he asks us introspectionists (and most of the anti-behaviorists he draws up in his formidable list are anything but introspectionists) to do a little *self-analysis*, may we not ask him *en revanche* to return the courtesy and explain *objectively* why so many objectivists in psychology should give him the impression that they are paranoiacs seeing "an enemy in everyone not an anointed introspectionist" and detecting a "danger in all objective

study"? And were these "anointed introspectionists" really so fearful of the inroads of behaviorism, would they be advocating new systems of behaviorism rather than eschewing the slightest association with the radical movement and employing the term *behaviorism* only in criticism? Dr. Hunter implies that every psychologist who is not a behaviorist *à la* Watson—I suppose in accordance with the famous dictum "He who is not for me is against me"—must be an anti-behaviorist, but since he has found only two behaviorists, Watson and Weiss, he himself, by implication, must be classed as an anti—and now who will hunt the hunter?

Our interrogator is apparently given to paradox, for after admitting that he has followed "your papers during the last ten years with keen interest and much profit" he rather ungratefully asks "Why do you write so much?" May I answer for my part that it was this polygraphy—if I may use the word in an archaic sense—which has enabled me to undertake the very task which Dr. Hunter was anxious to have performed, and to answer at considerable length his questions: "Who are the behaviorists?" and "Have you ever brought together a bibliography of this topic for the last decade?"

A. A. ROBACK.

HARVARD UNIVERSITY.

Dr. Edwin G. Boring, professor of experimental psychology at Clark University, has been appointed associate professor of psychology at Harvard University. Dr. Herbert S. Langfeld has been promoted from an assistant professorship to associate professorship at Harvard.

THE JOURNAL OF PHILOSOPHY

THE NATURE OF SPACE. II

THE EMPIRICAL BASIS OF GEOMETRY

IT is so long since geometry reached the assured position of a deductive science, that it is hard for us now to realize that it was ever in an inductive stage. But this, of course, is plain historical fact. The geometry of the Egyptians was a body of practical rules of mensuration, which were the outcome of long experience and careful observation—though they were far from exact, according to our standards. And the geometry of the early Pythagoreans, while it exhibits from the outset the Greek interest in pure theory, and was thus destined to develop into the organization of consecutive demonstrations which the science in its classical form exhibits, was still essentially empirical in its methods and standards.

When one speaks in this way of an inductive and a deductive stage in the development of a science, it is not suggested that in the former stage deductive processes are not employed. The distinction rather is that when the deductive stage has been reached induction is no longer used as a method of proof, but only for purposes of discovery or of illustration. When it has been demonstrated, for example, that the three internal angle-bisectors of a triangle meet in a point, there is no necessity for confirming the result with rule and compasses; and if, on actual trial, the three bisectors should appear not to converge, one would blame the draughtsman or his instruments, not the principles involved.

In the case of geometry, the deductive stage waited upon the conception of the *point*—of that which has position and not magnitude. The existence of bodies must be attested, directly or indirectly, by specific observations. The existence of points is attested by general axioms, which recognize no distinction between possible points and actual points. Take away all bodies, and the system of points is conceived to remain the same. Thus the system of points is space *as such*—space which may be full or empty without its characteristic properties being in any way affected.

The earliest Greek geometers knew nothing of the point: and accordingly they could not make the distinction between space and extended matter. The folk-mind, as well as early science, has the two conceptions, "something" and "nothing," the former of which is often identified by science with "matter," the latter with "empty space." But the latter identification, at least, is inexact. Empty space can be conceived only as distinguished from *filled space*, not as distinguished from matter; for space is space, whether filled or empty. The folk-mind also has a conception of "place"—a place where something may or may not be. And it has the closely related conception of a "hole" which may be made in a given place, and which again may be filled up. These also are not equivalent to the notion of space, because of the relativity to actual "somethings" which they contain. A place in a moving cart moves with the cart. A hole in a log disappears when the log is burned up. If there is an unmoved place, it is at, in, or on something that is unmoved. The developing scientific consciousness appropriates these conceptions, and interprets them in the light of its space-conception. For science, it is primarily the point that has position; and the position of a point is primarily relative only to other points. The hole, if really unfilled, becomes a "vacuum," *i.e.*, empty space; and, contrariwise, infinite space itself becomes the "universal receptacle"—a hole, if you please, that is not a hole in anything. But these are developments that distinctly belong to science, not to the folk-consciousness, and not even to the beginnings of science.

The Pythagoreans long confused mist and darkness with empty space. And, at the same time, they thought of space (or mist) as made up of discrete units. Two of these units, side by side, made the shortest possible line. Three were necessary to make a surface. A little pyramidal heap of four was the minimum solid.

What is geometry without the point? And how can such a geometry give rise to the conception of the point? These are the questions which are now to engage our attention. Unfortunately we can have but slight guidance from the recorded history of the science in answering them. The fundamental principles that are involved are such as must have come to universal recognition long before the beginnings of geometry as a distinct body of knowledge. Accordingly, they are not regarded by primitive scientists as worthy of explicit statement; and when geometry reached a stage in which the systematic statement of its foundations was felt to be a desideratum, the conception of the point, with the attendant abstraction of space from matter, was already firmly established, and no need was felt for going behind it.

The foundations of an inductive science differ necessarily in the most radical fashion from the formal beginnings of a deductive science. The latter has its few indefinables and its set of axioms. The inductive science has indefinables in plenty, not in the sense of concepts that do not need definition, but in the sense of concepts that are too vague to admit of definition; and it has unproved principles in plenty, which are assumed, not because they are self-evident, but because they are plausible. As the science advances, its earlier indefinables may be defined, or they may disappear by reason of radical inconsistencies that have been discovered in them; and, at the same time, the earlier "axioms" may be demonstrated, or they may be shown to be unsound. "As far as the east is from the west," said the psalmist, little thinking that east and west come together. That bodies which are not supported fall downwards is an ancient maxim, from which even today our imaginations are not wholly liberated. With the earliest physicists it sometimes passed unquestioned; witness, for example, Anaximenes's theory, that the reason the earth does not fall is that its shape is that of a broad leaf, so that it is supported by the air.

Starting from such assumptions, the inductive science attempts to reach clearness in some one direction, leaving everything else untouched for the time being. Such attempts are generally destined to meet with very slight success; for the assumptions that are still blindly made vitiate the whole procedure. But there is no other way. We can not move our whole thought-world at once. It is only by using the solid earth of common sense as a fulcrum that we can hope to budge some one block of prejudice. It is only by trusting to the great mass of our opinions as if they were absolute knowledge, that we can hope to correct some special misconception. Success comes when, by good fortune, the unsteadiness of our fulcrum does not markedly affect the work performed.

Let us enumerate some of the common-sense conceptions which inductive geometry must use in order to give clearness to its own conceptions.¹

First in order stands the physical *solid*. In some rough fashion this conception must have belonged to men since they began to reflect at all. Solids behave in characteristically different ways from liquids, as well as from wind and fire. They impress us differently, and we manipulate them differently—in just what ways we need not specify. Nor need we stumble over the fact that there are all degrees

¹ A first sketch of the theory here developed is contained in an article on "The Nature of Primary Qualities," in the *Philosophical Review*, Vol. XXII, pp. 504-6.

of viscosity and solidity that separate the typical liquid from the typical solid; much less distress ourselves with the thought that not even the typical solids are absolutely rigid, even when they are not long and thin enough to be bent like wire. We put all such sophistications aside; and, without pretense of definition, we boldly assume that we mean something definite enough by a "solid," and that solids in general are good enough solids for the immediate purposes of our science.

Secondly, there is *motion*, with its negative *rest*. We have a variety of ways of perceiving motion, both in our own bodies and in other bodies. As little as in the case of the solid shall we attempt to be precise or to guard our conceptions from ambiguity. We shall not ask ourselves whether by "motion" we mean absolute or relative motion, or, if the latter, relative to what. No; we simply mean motion, as we see it and feel it. Again, we do not allow ourselves to be perplexed by the image of an Heraclitean flux; nor by the thought that, as observation becomes more exact, many things that seemed to be at rest are found to be in motion, so that it is doubtful whether in the world anything is at rest either absolutely or relatively to anything else. We ignore all such considerations. By rest we mean the condition of most of the things about us, most of the time, as they appear to common observation.

Thirdly, there is *contact*. This also we have various ways of perceiving, not all of which are always possible, but which generally confirm one another. We can often see that two solids are in contact with each other, and hear when they are brought into contact. We have a special sensation that informs us when something touches our own body; and, by a change in its intensity, this sensation also informs us when a solid which we are holding touches another solid. Strain sensations serve the same purpose. There is also this familiar and fairly trustworthy test: that it is only when two solids are in contact with each other or are both in contact with a third (intervening) solid that we can cause a movement in one of the two by moving the other.

Lastly, there is *simultaneity*, whether it be of momentary events or of more or less enduring conditions. However, on account of the narrowness of the field of human attention, simultaneity can, in general, be attested only by an absence of relevant change as our observation shifts to and fro between the compared objects, and hence can, in general, mean only the temporal overlapping of conditions.

How are these conceptions involved in geometrical observations? The answer is not far to seek. Spatial measurement is an operation performed primarily upon solids. To measure a liquid or a vapor

is, in general, to measure its solid container. Moreover, the measuring-rod itself is in all cases a solid, either rigid in itself, or—as in the case of a taut string—given a temporary rigidity. Geometry, as the science of spatial measurement, is thus a science of solids; and, while endeavoring to refine its conception of certain of the properties of solids, it must necessarily take for granted at the outset a gross common-sense notion of the solid as such.

More precisely, the operation of measurement, in its fundamental form, involves the observation of the occurrence or non-occurrence of the *simultaneous contact of one solid with two others*, which may, indeed, be parts of a single solid. There are, of course, other modes of measurement: directly by the eye or hand; indirectly by the time which a familiar movement, such as walking, over the given distance requires. Or a measuring-rod can be used without actual contact. But, when we observe that one solid touches two others simultaneously, we know, with an assurance limited only by our confidence in that observation, that the distance between the two is not greater than the length of the intervening one. And when we find that, try as we may, we can not make one solid touch two others at once, we are assured that the distance between these two is greater than the length of the one. For the purposes of empirical geometry, that is the meaning of these observations.

In all this it is assumed that our powers of manipulating the solid with which we try to touch two others are practically unlimited; and, in particular, that we can freely move any fourth body that might otherwise interfere with the process.² As a matter of fact our ability freely to manipulate objects, or to move them so that they will not interfere with our manipulation of other objects—or, for that matter, to keep them at rest while other objects about them are moving—is decidedly limited. We must, of course, base our inductions on the observations where the required conditions are satisfied; and we then assume that were our powers greater we should have been able to make similar observations in the other cases. In this respect empirical geometry does not differ from other empirical sciences.

Just as men may be assumed to possess, from the earliest stages of reflection, some notion of the solid, of rest and motion, of contact, and of simultaneity, so they may equally be assumed to possess some notion of *distance* and of *length*. We can not, however, in what follows make any express appeal to this phase of early thought; for it is precisely here that our endeavor to substitute clear definition for common sense must begin.

² Here, in addition to the conceptions enumerated above, a vague conception of *force* is involved.

The first step is to bring before our attention a certain fundamental induction, which may be called the *principle of measurement*, and upon which our whole further procedure rests:

If the solids *A*, *B*, *C*, and *D* are at rest, and if there is at least one solid *X* which can be brought into simultaneous contact with *A* and *B*, but can not in any way be brought into simultaneous contact with *C* and *D*, then there is no solid that can connect³ *C* and *D* but can not connect *A* and *B*.

Attention must be called to the condition that no one of the four solids, *A*, *B*, *C*, and *D*, shall move. If any one of them is observed to move, further observation often shows that it is then possible to find a solid that can connect *C* and *D* but not *A* and *B*. But, furthermore, sometimes it happens, even when no one of the four has been *observed* to move, that nevertheless the principle fails to hold. In that case, we say, perhaps, that one of the objects actually moved, though we did not observe it, either because we were not watching it at the time, or—and this is the important point—because our observation was defective. We are often ready, in such a case, to condemn an observation as defective, even though we have no reason to believe that it was less careful than any observations upon which we impose complete reliance. Or we say that in the interval between the tests some change occurred in the capacity of one of the manipulated solids to connect other solids.

Thus this fundamental induction of geometry is not supported by evidence that is in itself perfectly consistent. Direct observation does not prove it to be invariably true, but rather goes to show that it is sometimes, though comparatively rarely, contrary to fact. We follow in the induction the overwhelmingly great mass of our observations; and we simplify our experience by bringing the apparent exceptions into line. The simplification is the greater, in that we are thus enabled to extend our induction to *all solids whatsoever*, whether they be at rest or not. It now becomes:

If *A*, *B*, *C*, *D*, and *X* be any solids, and if, at any moment, *X* can connect *A* and *B* but can not connect *C* and *D*, then, at that moment, no *Y* exists which can connect *C* and *D* but not *A* and *B*.

The proposition at which we thus arrive may be brought under a wider induction that is reached as follows:

In the first place, if there exist two solids, *X* and *Y*, such that while *X* touches *A*, and *Y* touches *B*, they can at the same time be made to touch each other; and if *X* and *Y* can not be made in this sense to "connect" *C* and *D*; then no solid, and no pair of solids, can be found that can connect *C* and *D* but not *A* and *B*.

³ We shall hereafter use this term instead of the cumbersome phrase, "be in simultaneous contact with."

At the same time, let us note that if X and Y can connect A and B in the order, " A touches X , which touches Y , which touches B ," X and Y can also be made to connect A and B in the order, " A touches Y , which touches X , which touches B ."

In the second place, if there exist one or more solids, V , W , X , Y . . . ; which can be made to connect A and B in that order, then they can be made to connect A and B in any order whatsoever. And if, further, they can not be made to connect the solids C and D , then no solid or chain of solids⁴ can be found which can connect C and D but not A and B .

In the third place, where there are more than two solids inserted between A and B , it is not necessary in our tests that all the contacts be simultaneous. For example, let V touch A and W ; then, if W remains at rest, V may be removed; when X has been brought into contact with W , W may be removed; and so on, until contact with B is secured. However, when it comes to proving that a connection between A and B can *not* be effected by a given combination of solids, this method is cumbersome; for the removed solids must be again and again replaced, in order to test whether some new mode of contact may not make it possible for the connection to be secured.

In the fourth place, a solid that has been removed according to the method above described may be used again, either at once or later, so that one or more solids may be used any number of times. If, in connecting A and B , V has been used m times, W n times, X p times, *etc.*, then, no matter how the order is changed, it is always possible to connect A and B by using the intervening solids the same numbers of times. And if C and D can not be connected in this way, then there is no proportion in which any collection of solids can be used to connect C and D , in which they can not also be made to connect A and B .

In particular, any two solids may be used alternately, as often as desired, in effecting a connection.

We may repeat here, with reference to the formation of chains of solids, and their manipulation, a remark that was made above with reference to the manipulation of solids as such. The number of "links" which we can manage varies greatly both with the links that are employed and the conditions under which we employ them. The inductions of geometry are based upon observations made under conditions where we are able to use any and all links that we wish to use, as often as we please; that is to say, where, for the purposes of the observation, no limitations are felt. Accordingly, we assume

⁴ This brief and convenient expression will be employed frequently.

that any solids whatsoever may be combined in a chain, each of them being reinserted as often as we please. Here again geometry does not differ from other empirical sciences.

We are now prepared for the following definitions:

I^a If *A*, *B*, *C*, and *D* are such that a solid (or chain of solids) *X* can be found, which can connect *A* and *B* but not *C* and *D*; then *C* and *D* are said to be *farther apart than A* and *B*.

I^b If the solid (or chain of solids) *M* and the solid (or chain of solids) *N* are such that two solids, *X* and *Y*, can be found, which *M* can connect, while *N* can not; then *M* is said to be *longer than N*.

Thus we have brought before us the "indefinable" relation assumed by metrical geometry in its deductive form—not, however, as subsisting between pairs of points (of which, as yet, we know nothing), but as subsisting between pairs of solids. At the same time, there is introduced the relation "to be longer than," which we had no occasion to note in the earlier discussion, but which stands in a curious correspondence with the relation "to be farther apart than." This correspondence we shall continue to indicate by means of parallel columns.

From the fundamental induction we may at once conclude:

If *A* and *B* are farther apart than *C* and *D*, *C* and *D* are not farther apart than *A* and *B*.

If *A* and *B* are farther apart than *C* and *D*, and *C* and *D* are farther apart than *E* and *F*; then *A* and *B* are farther apart than *E* and *F*.

II^a If *A* and *B* are not farther apart than *C* and *D*, and *C* and *D* are not farther apart than *A* and *B*; then *A* and *B* are said to be *just as far apart as C* and *D*.

III^a The *distance between A* and *B* is the class of pairs of solids that are just as far apart as *A* and *B* (or the property of being just as far apart as *A* and *B*).

If *M* is longer than *N*, *N* is not longer than *M*.

If *M* is longer than *N*, and *N* is longer than *P*; then *M* is longer than *P*.

II^b If *M* is not longer than *N*, and *N* is not longer than *M*; then *M* is said to be *just as long as N*.

III^b The *length of M* is the class of solids (or chains of solids) that are just as long as *M* (or the property of being just as long as *M*).

The double form of these last two definitions has been sufficiently explained in another connection.⁵

IV^a If A and B are farther apart than C and D , the distance between A and B is said to be *greater than* the distance between C and D .

IV^b If M is longer than N , the length of M is said to be *greater than* the length of N .

It is easily proved that the relation "greater-than," as thus subsisting between distances on the one hand, and between lengths on the other, is asymmetrical and transitive.

We must now pass on to consider the relations that may subsist between a distance and a length:

V^a If M can connect A and B , but can not connect any pair of solids that are farther apart than A and B ; then the distance between A and B is said to be *equal to* the length of M .

V^b If M can connect A and B , but no solid (or chain of solids) N , such that M is longer than N , can connect A and B ; then the length of M is said to be *equal to* the distance between A and B .

It will be recalled, that, treating distances and lengths as classes, we do not speak of one distance's being equal to another distance, nor of one length's being equal to another length, but of identical lengths and identical distances. But a distance and a length can not be identical; hence the necessity of the above definitions.

The two following propositions are easily established:

If the distance between A and B is equal to the length of M , the length of M is equal to the distance between A and B .

If the length of M is equal to the distance between A and B , the distance between A and B is equal to the length of M .

VI^a If the distance between A and B is greater than a distance that is equal to the length of M , it is said to be *greater than* the length of M .

VI^b If the length of M is greater than a length that is equal to the distance between A and B , it is said to be *greater than* the distance between A and B .

It will be observed that up to this point our account of distances and of lengths has been perfectly symmetrical. At this point the symmetry breaks down.

VII^b The *sum* of the lengths of M and N is the length of the chain consisting of M and N .

⁵ See the remarks on Definition II in the preceding article.

This definition can not be duplicated for distances, for the simple reason that while there are chains of solids, there are no analogous chains of pairs of solids; or, as we may express the matter, while there are chains of lengths, we are acquainted with no chains of distances. Hence the sum of two distances must be defined indirectly, in terms of the sum of the corresponding lengths:

VII^a The *sum* of the distances between *A* and *B* and between *C* and *D* is the distance that is equal to the sum of the lengths that are equal respectively to the distance between *A* and *B* and the distance between *C* and *D*.

The importance of this defect in the general symmetry will be discussed below.

The effect of Definitions V^a and V^b, and of the two propositions which follow them, is to establish a correlation between lengths and distances. The question arises whether there can be assumed to exist a distance equal to every length, and a length equal to every distance.

On account of the freedom with which many solids can be moved, it is in general possible to exhibit a pair of solids that are at a distance equal to the length of a given solid (or chain of solids). And, though this can not always be done, no reason in any instance appears to indicate that a pair of solids at the required distance from each other *may* not occur. Accordingly, we assume that there is a distance equal to every length.

The answer to the second part of the question involves the consideration of the peculiar sense in which one solid may be *part* of another solid.

It often happens that two solids can be brought into contact with each other in such a fashion that thereafter they can be manipulated, and may therefore be regarded, as a single solid. In such a case, the collection of two solids is no mere logical collection, or class. It is a collection, between the members of which a relation subsists which makes it a "unity," or "complex"; and this unity, or complex, is a solid. The two members of the collection are then called *parts* of the collection considered as a solid; and the latter is called the *whole*.

The like may happen with any number of solids.

It also happens that a solid may be, as we say, *broken*, that is, undergo the reverse process: being changed into a collection of

solids that is not itself a single solid. When this appears possible, we may, independently of any such actual process, regard the solid as a complex of those solids into which it might be broken; and these are then called its parts.

We assume that if a part of a solid is in contact with another solid, the whole is also in contact with that solid. This appears to be implied in the notion of contact, which (it will be recalled) we have not here attempted to analyze.

Observation shows that a whole is often longer than one of its parts, though the part may be just as long as the whole. But a part can not be longer than the whole. It is generally possible to break up a solid into parts (and it is thus legitimate to consider it as already made up of parts) such that the whole is longer than any one of them; and this process may, in general, be continued until the parts are such that an assigned solid is longer than any one of them. Similarly, if a pair of solids are not in contact with each other, it is generally possible to break a third solid into parts, no one of which can connect the pair. Furthermore, though it often happens that, with the available means of manipulation, a solid is unbreakable, it also often becomes possible to break such a solid; and no absolute limit to the process of continuous breaking is known. Accordingly, we assume: (1) that if M and N be each any solid, M may be considered as made up of parts such that N is longer than any one of them; and, similarly, (2) that if M be any solid, and if A and B be any pair of solids that are not in contact with each other, M may be considered as made up of parts no one of which can connect A and B .

Observation further shows that if a solid M is longer than a solid N , it is in general possible to divide M into two parts, one of which is just as long as N ; and that if the length of M is greater than the distance between two solids, A and B , which are not in contact with each other, it is in general possible to divide M into two parts, the length of one of which is equal to the distance between A and B . And, again, though it often happens that with the available means of manipulation such a division of M can not be effected, some addition to these means often makes the operation possible; and we see no final limit to such possibilities. We therefore assume that if M be longer than N , it contains a part that is just as long as N ; and that if its length is greater than the distance between A and B (which are not in contact with each other), it contains a part which is equal to that distance.

A similar observation applies to combinations of solids. If the length of a given chain is greater than a given distance, it is, in

general, possible, by omitting one or more members of the chain, or by including only a part of one member, or both, to find a length equal to the given distance; and we accordingly assume that this is always possible.

Finally, if *A* and *B* be any pair of solids, and if *V*, *W*, *X*, etc., be any collection of two or more solids, it is, in general, possible to form a chain of these latter solids (repeating them as often as may be desired) that can connect *A* and *B*. And though we are not always able actually to effect the connection—because of the inaccessibility of one or both of the pair of solids, or because of the difficulty of manipulating any of the members of the collection—we assume that there is no essential impossibility in the matter, that is to say, none that is not relative to our limited powers; and, accordingly, we hold that from any collection of two or more solids a chain can be formed that will connect any given pair of solids.*

It appears from the foregoing, that for every length there is an equal distance, and—if we leave out of consideration pairs of solids that are in contact with each other—for every distance there is an equal length. It remains to consider the one case of which exception has been made. Is there a length corresponding to the distance between two solids that are in contact with each other?

Our experience is (1) that any solid will connect a pair of solids that are in contact, and further (2) that there is no solid that will not suffice to connect some pairs of solids that are not in contact. But this is as much as to say that, in our experience, there is no solid whose length is equal to the distance between two solids that are in contact.

Nothing, however, prevents us from assuming that, *beyond the limits of our experience*, such solids exist. It might be supposed that an assumption of this character would be perfectly idle and frivolous; but that is not necessarily the case. There are two common classes of motives that lead to such assumptions. What can not possibly be perceived may be assumed to exist, first, in order to account by its behavior for the behavior of various things which we can perceive; or, secondly, in order to simplify our mode of statement of many generalizations regarding things which we can perceive. It is, indeed, not always clear which of these two classes a given assumption illustrates. The chemical atom has sometimes been regarded as a causal agent, sometimes as a fiction of merely notational significance.

* If the collection consists of two solids, and if these are of the same length, this principle reduces to the so-called "principle of Archimedes," that the ratio between any two distances is finite.

Let us postpone the question of motive—except as the attractiveness of an obvious symmetry may suggest itself—and arbitrarily assume that solids whose length is equal to the distance between solids that are in contact with each other exist; and, in particular, that whenever two other solids are in contact with each other, at least one of these supposititious solids is in contact with both. We have then arrived at the conception of the *point*, as it enters into metrical geometry.

As so conceived, the point has several noteworthy properties.

1. Since it can connect no solids that are not already in contact with each other, the point does not increase the length of a chain to which it is added. In other words the length of the point is *zero*.

2. The point can contain no parts which are not themselves points in contact with each other. For no part can be longer than the whole. Furthermore, every part must be in contact with every solid with which any part is in contact. Thus no part of a point can be distinguished in any way from any other part or from the whole. We therefore assume that the point has no parts.

3. Similarly, two points that are in contact with each other—*coincident* points—can have no different properties, unless because of some difference in movement. If we assume that points, like other solids, can move, we need the conception of coincident points; otherwise not.

4. Since points are not given in experience, we can not distinguish between an actual and a possible point. If we assume that points exist, every possible point must be regarded as actual.

5. Accordingly, if we assume that points exist, we must assume at least one for every possible contact between solids. In particular, every two adjacent parts of any solid call for at least one point; and, as the solid is divisible into parts *ad infinitum*, every solid must, in this sense, “contain” an infinite number of points.

The points that are thus requisite are indicated by the existence-axioms of geometry.

6. Points group themselves in what are called “surfaces” and “lines” (or, as the mathematicians call them, “curves”). A collection of points at which two solids may be in contact with each other is called a “surface.” A surface is thus, as we say, the “outside” (or a part of the outside) of a possible solid. A collection of points at which three solids may be in contact is called a “line,” or “curve.” A surface, in this sense, *may* consist of a single line, or even of a single point; and a line may consist of a single point.

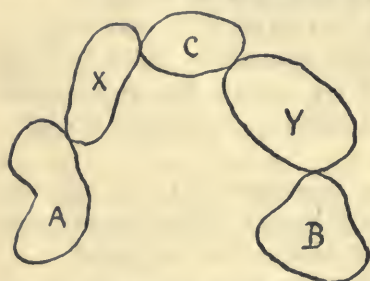
But why should we assume that points exist? What reason

have we for entertaining a supposition, outrunning, as it does, the limits of our experience?

In a great many of the measurements in which we are interested, the distances directly involved are much greater than the lengths. This is necessarily the case, for the reason that so many important solids are too big for us to move them at all, or, at any rate, to move them freely. In such a case we measure the distance between two parts of the solid, or the distance between two other solids which the solid in question touches. For we can measure great distances with comparative ease by means of chains of solids, the separate lengths of which are of convenient magnitude.

The distances with which we have to deal are often *so much greater* than the lengths of the objects between which they are measured, that the lengths are altogether negligible in comparison. Thus we may measure the distance between two little stakes at opposite sides of a valley.

Where the lengths of the solids are altogether negligible, a considerable simplification of some of the relations involved may occur. The following case is typical:



When a chain of three solids, *X*, *C*, and *Y*, connects a pair of solids, *A* and *B*, we know that the distance between these latter solids is not greater than the length of the chain. Moreover, the distance between *A* and *C* is not greater than the length of *X*; and the distance between *C* and *B* is not greater than the length

of *Y*. It follows that the distance between *A* and *B* is not greater than the sum of (1) the distance between *A* and *C*, (2) the length of *C*, and (3) the distance between *C* and *B*. Now, if the length of *C* is negligible, we may simplify this statement, saying that the distance between *A* and *B* is not greater than the sum of the distance between *A* and *C* and the distance between *C* and *B*. This need not be true, but it will not, at any rate, be seriously false.

If, now, we suppose *C* to be a point, the simplified statement becomes universally and absolutely true. And if *A* and *B* are likewise points, we may say that the distance between any two of the three points is not greater than the sum of their distances from the third point.

It may be recalled that in a previous article we used this relation as the basis of a definition of the sum of two distances. But without points the direct addition of distances is impossible: the

sum of two distances is merely the distance equal to the sum of the two lengths that are severally equal to the given distances. Without points we can not have a *chain of distances*, as we have chains of lengths.⁷

With points we can have precisely that: the distances between successive members of a series of points.

But what is there of real value in this simplification? Is it not over-simplification? Since, so far as we know, there are no points, what sense is there in laying down propositions that are true only of points?

In answer we may refer to the fact already mentioned, that, though there are no points in our experience, it frequently happens that the solids with which we have to deal are relatively so small that their length does not matter to us. The condition, "Let A , B , and C be three points," is, to be sure, a condition which we have never found realized. But we find what, to us, are very close approaches to it; and, *the nearer the approach, the smaller the margin of possible error* in the conclusion, " AB is not greater than the sum of AC and CB ." The geometrical formula is descriptive, not of any object of our actual experience, but of *an ideally simplified object, which the real objects may approach indefinitely*.

It is interesting to recall that Galileo has made a similar observation with regard to the principles of mechanics. Consider, for example, the "law of falling bodies": that they fall with a velocity proportional to the time that they have been falling. Is this law obeyed by the bodies that we perceive? Evidently not by the falling leaf or feather. But many other bodies obey it very closely—some so closely that it is difficult or impossible to discover any departure from exactness. But that does not in itself excuse the obvious exceptions. The excuse for the exceptions is that they do not conform to the essential conditions of the law. Their fall is interfered with by the resistance of the air; and the law requires that it shall take place in a vacuum, where no such interference is possible. But in the more favorable instances does the object fall in a vacuum? No. We have no means of obtaining a perfect vacuum. Of what value, then, is the law, since it calls for a condition that is never in our experience verified?

The answer is that, although we can not wholly eliminate the resistance of the medium through which the body falls, we can reduce this resistance in various ways. Some bodies are of such density and of such a shape, that they encounter a very slight resistance; and approximate vacuums can be formed in which even

⁷ Cf. p. 428.

a feather falls like a shot. And the more nearly the required condition is satisfied, the more nearly the law is found to be obeyed—the smaller is the margin of error within which a prediction according to the law can be safely made. While, therefore, the law is not exactly descriptive of any observable event, it does describe *an ideally simple event which the observed events approach as a limit*. As Galileo pointed out, this is the general character of mechanical laws.

The closely analogous case of the law of the pendulum—that the period of oscillation is independent of the amplitude, and varies as the square of the length of the pendulum—is worth noticing. Apply this law to the swinging chandeliers, and it is verified, but only approximately. As before, we have to observe that the conditions laid down by the law are not adequately met. The chandelier is not a pendulum. The pendulum, for instance, swings from a point, or from a straight line perpendicular to the plane of oscillation; the chandelier does not hang from a point or even from a straight line. But where is such a pendulum to be found? It is not to be found. The pendulum, as mechanics defines it, and as the law of the pendulum describes it, is a thing lying altogether beyond any possible experience of ours—an ideal, for which we can find approximations of varying closeness, but no exact realization.

This, as we have seen, is likewise the nature of the point, and of the system of points which we call “space.” A surveyor’s stake is not a point, nor is the tiny pencil-dot which he makes upon his map. But the surveyor treats them as points, and thereby commits no serious error. For the purposes of his work they are *pretty good points*, as the chandelier is a pretty good pendulum. The points in space are the perfect type—the Platonic archetype, if you choose—which the stakes and pencil-dots resemble, approximate, imitate, in whose characteristic properties they participate, and of which they are, therefore, serviceable illustrations. When, in the study of material “points,” the laws of geometry are exactly verified, that means that the approximation is close enough to conceal the error. But if the verification is not exact, the laws of geometry remain unrepealed. The inexactness is attributed to the imperfection of the conditions. The geometry of stakes and pencil-dots is the geometry of points *plus* an uncertain amount of unimportant variation from the norm.

Let us now turn our attention to the principle of measurement which was discussed on an earlier page of this chapter. The constancy of the relations of possible simultaneous contact between solids is the essential precondition of all measurements of lengths

and distances. And yet this constancy is, so far as we can surmise, not perfectly exemplified by any collection of solids in the universe. There are many collections that exemplify it tolerably well. The vast majority of things on the earth's surface constitutes such a collection. But, if we press our observations home, we find shifting and shrinking and expansion everywhere, and the very conception of lengths and distances seems to melt into nothingness.

What course has science followed in this connection? It has simplified its account of our experience in a manner which was strongly suggested by the great mass of our observations, and which not only explained away all past exceptions but provided in advance for all possible future exceptions. This result was accomplished by putting the principle of measurement in a form in which it clearly transcends human experience: as a proposition involving a universal existential negative and limited to a single moment of time. As we have phrased it,

"If A , B , C , D , and X be any solids, and if, at any moment, X can connect A and B but can not connect C and D , then, at that moment, no Y exists which can connect C and D but not A and B ."

The conditions laid down in this principle are never given in experience. So complex a simultaneity is unobservable. But approximations to it are found. Many things change slowly, and some are changeless so far as our available instruments and methods can attest; so that the duration and successiveness of our observations is in varying degrees unimportant. In just those degrees the principle of measurement is more closely verifiable. Once more the law of nature is found to describe an ideally simplified object: a world of hypothetical solids which are absolutely rigid and—with exceptions that we have elsewhere noted—absolutely motionless.

The assumption of the existence of perfectly rigid and motionless solids, like the assumption of the existence of points, is of a purely formal character. By no human observation can they be directly confirmed or invalidated. So far as the applications of geometry are concerned, from the simple measurement of lengths and distances onward, it matters not in the least whether solids of zero-length or solids of absolutely constant length exist at all. By means of these conceptions—these figures of speech, if you please—we are enabled to analyze and describe the relations of possible simultaneous contact between solids with the greatest economy and practical success. If these relations were in practise altogether unpredictable—if the universe were to our perception a chaos, in which everything was in irregular motion—there would be no measurement; and if the lengths which we have to deal with were seldom

negligible in comparison with the distances, there would be no geometry of points. The utility of the formal assumptions depends on the approximate illustration of them in the field of actual experience.

It may be asked, how far the conclusions which we have reached agree with the well-known theory of Poincaré. The answer is that they correspond pretty closely with his conception of mechanical principles, while they disagree flatly with his conception of geometrical principles. For one of the striking features of Poincaré's theory of mathematics is that geometrical and mechanical principles stand upon an essentially different footing. The former are *conventions*, resting, not on evidence, but on their superior convenience as compared with other logically possible conventions. The latter have a *double* character; first, as empirical generalizations, based (like all such generalizations) on the approximate agreement of inexact observations; and, secondly, as mathematical equations which are exact and irrefutable, but only because, as such, they are logically insignificant identities. I have tried to show that geometrical principles too, as descriptions of an ideal limiting instance, have this double character of empirical generalizations and of identities. I have tried to show how this double character arises and wherein its utility consists. If I am right, it may be suggested* that Poincaré's error arose from his acceptance of the traditional view, that geometry is altogether prior to mechanics. As members of the system of mathematical sciences this is true of them. As empirical sciences of nature, it is by no means strictly true of them.

In conclusion, it may be observed—though the observation goes far beyond the proper limits of this inquiry—that a very similar account may be given of the general law of the uniformity of nature.

This law has been variously regarded as a self-evident truth, as an empirical generalization, and (since Kant) as a postulate of scientific inquiry—something that is not known to be true, and can never be proved or disproved, but must be assumed if empirical science is to proceed in the search for truth. The first hypothesis was long orthodox, but has been discredited, not only by reason of the general discredit into which axioms as such have fallen, but also by reason of the unclearness and inconsistency of its own many attempted formulations. The second hypothesis has therefore become attractive to men of an open mind; but it has been hard to see how such a principle as the uniformity of nature could be established by induction. J. S. Mill's theory, that it is based upon an unbroken enumeration of positive instances, valid because commensurate with human

* Cf. my review of *Science and Hypothesis*, in the *Philosophical Review*, Vol. XV, No. 6 (November, 1906), pp. 634 ff.

experience, will scarcely hold; first, because by far the greater part of our experience presents no observable uniformity, and, secondly, because a great deal of our experience presents what to *prima facie* observation are distinct breaches of uniformity. The Kantian type of theory remains; but it, in turn, labors under the difficulty of conceiving how the advantages of believing a thing are a sufficient justification for assuming it. As a matter of fact, moreover, the schools of Plato and Aristotle did not accept the principle, and yet were active in many fields of investigation. And it is not apparent why all search for uniformity would be impossible except on the supposition that no irregularity anywhere exists.

Is not the case similar to that of the fundamental principle of spatial measurement? As has been pointed out above, direct observation does not prove this principle. Contrary experiences abound. But these we explain away by saying that in each case some one of the solids has moved or changed in length without our observing it. The principle is thus raised above any direct refutation by experience. All possible exceptions are accounted for. But at the same time it loses its value as *information*. Little good is it, merely to know that your measurements are valid provided your measuring-stick has not swelled or shrunk and the objects measured have not changed their interrelations. What is wanted is a sufficient assurance that these things have not happened—to any serious extent.

Similarly, when irregularities in the sequence of events occur we are ready in advance with a universal method of explaining them away. Either we hold to the rule, but declare that its working was interfered with by some contrary tendency, or we admit that the rule is not absolute, but at the same time declare that an absolute rule—if we could but know it—still obtains. In this sense, the uniformity of nature by no means includes or implies the acceptance of any particular uniformity. The law of gravitation, of the indestructibility of matter, or even of the conservation of energy may be only approximations to truth; but the uniformity of nature is undisturbed. To believe in it is to be committed to nothing. It is like the churchman's belief in the verbal inspiration of the original manuscripts of the Bible.

It has been argued (*e.g.*, by Sigwart) that the principle of the uniformity of nature is an indispensable premise of every inductive argument: because we know that "the given is determined," we are able to prove that a particular mode of determination obtains. On the contrary, I can not see that the general principle strengthens in the slightest degree the argument for any particular uniformity. It might, if we were able to argue: "Some mode of determination exists; no other than this suggested mode is possible; therefore this is the

one." But the evidence for a law is never so extensive, and it is always more positive. For this reason the further argument that is sometimes met with—that the uniformity of nature can not be inductively established, because it is an essential premise of every induction—does not appear to be sound.

Men's actual belief in the uniformity of nature shows itself in their confidence in the continued operation of the various empirically discovered laws of nature. And, historically, it is the rise of empirical science that has given the principle its secure hold upon our convictions. Its earliest recorded expression, at the dawn of science, by Heraclitus of Ephesus, was based upon the simple cosmological and physiological phenomena upon which scientific attention was then fixed—the regular cycles of the day and the year and of the generations of human life—and in particular upon that first great generalization with which science may be said to have come into being: the permanence of matter amid the multiplicity of its sensible forms. The various limitations which have been set to it by ancient and modern thinkers have, for the most part, been similarly empirical in their basis, resting now on the imperfection of material things, now on the consciousness of power, now on the unpredictability of human caprice. The ascendancy of the determinist conception is a measure of the success which the enterprise of natural science has met with; and, generally speaking, it is more or less marked, as habits of thought are more strongly marked by scientific or by religious and esthetic influences.

As I see it, the uniformity of nature is a generalization more and more strongly suggested by the extension of man's understanding of nature. It is, in effect, an analytical proposition, providing, as it does, in advance for all apparent exceptions to it. Its significance lies in the fact that it presents an ideal background upon which the world, as it is now understood by us, may be projected, so that concrete programmes may thus be formed for a better understanding. Just as we have learned to see things, not simply as extending, but as extending in space; so we have learned to see the course of events, not only as exhibiting certain uniformities, but as merged in a universal cosmos. The sequences of things, as we perceive them, are often erratic, just as the measurements taken with our common yard-sticks often fail to agree by large fractions of an inch. Even the most refined observations with the most delicate instruments do not reveal a perfect harmony, though the disagreements commonly fall within a well-established margin of error. But behind the margin of error we see Nature—and Space.

THEODORE DE LAGUNA.

FISKE RE-ANTICIPATED

IN a recent number of this JOURNAL (April 13, 1922) Dr. W. R. Wells points out an interesting anticipation of the view of John Fiske on the value to the human species of its prolonged period of infancy. As Dr. Wells remarks, it is hardly likely that Fiske had read the English essayist of 1834, styled V. F.,—the less so as Fiske in the preface to "Through Nature to God" expressly claims originality for this contribution to the theory of evolution. But there is some likelihood that V. F. may have been acquainted with a passage in Herder's *Ideen*, of which an English translation appeared in London in 1800. The passage is in chapter 6 of Book iv, and freely translated runs as follows:

The first of human societies was that of the paternal household, a society bound together by the tie of blood, by confidence and love. In order that the wildness of human beings should be curbed and that they should become accustomed to this domestic environment and intercourse, it was desirable that the infancy of our species should last through many years. Nature (by this device) kept the group together through necessity and through tender bonds, so that it should not, as with the quickly maturing animals, scatter and forget itself. In this way, the father became not merely the sire but the educator of his son, as the mother had been his nurse; and thus a new element of Humanity was established. . . . We may say, accordingly, that *man is born to society*: a fact which is implied alike in the exceptional sympathy of human parents for their offspring, and by the years of the long human infancy.²

Of course, neither V. F. nor Herder gave this feature of human growth the evolutionary meaning which it has in Fiske's work. Neither goes much farther than to note the far-reaching utility of the arrangement; though Herder recognizes, as V. F. does not, its place in a series of natural stages, causally related.

In this very partial sense, Herder may also be credited, I think, with having anticipated the law of recapitulation, sometimes called Hæckel's biogenetic law. In opening chapter 4 of Book IV of the *Ideen*,—the thesis being that man is in some sort a composite or résumé of creation, and thus fitted to understand all other creatures,—Herder remarks that

The babe in the womb seems to pass through all the states that can pertain to any earthly creature. It swims in the water; it lies with open mouth, *etc., etc.*, . . . so man finds in himself all the animal instincts.²

This is recapitulation without heredity; and hence something quite different from the theory associated with the name of Fritz Müller or of Agassiz. But it is in a similarly truncated shape that

¹ From Suphan's edition of Herder's *Werke*, Bd. XIII, S. 159.

² Suphan, as above, p. 142.

the germs of this theory are commonly traced in the writings of Erasmus Darwin, Lorenz Oken, J. F. Meckel, St. Hilaire, d'Orbigny, and von Baer: and Herder's remark (published 1784) antedates all of these. The observation itself was probably not original with Herder, who was not a physiologist; but as far as I can trace any perception of the germ of its later significance, the trail seems to lead to Herder, and then vanish.

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BOOK REVIEWS

The Defective Delinquent and the Insane; The Relation of Focal Infections to their Causes, Treatment and Prevention. HENRY A. COTTON. With a Foreword by ADOLF MEYER. Louis Clark Vanuxem Foundation Lectures at Princeton University, 1921. Princeton: University Press. 1921. Pp. 201.

Dr. Cotton's book summarizes in simple form his distinctive psychiatric viewpoint and methods together with such broader aspects of mental sanitation as would have special meaning to the cultivated layman. It is a very timely book.

The historical account of "insanity" in its social relationships omits consideration of the not unfavorable supernatural interpretation sometimes put upon it in pre-Christian communities. The chain and straw-bed period is distinguished as the "Age of Iron." The early type of hospital, substituting the strait-jacket for the cage, represents the "Age of Leather." The standpoint of this book is unqualifiedly against restraint, and emphasizes not less than this, the desirability of closer coördination between psychiatric institutions and those of general medicine. Various statistics on state hospitals and general population are presented. The quoted range per 100,000 inhabitants is from 374.6 in New York to 83.1 in Arkansas. Similarly, the number of institutional defectives per 100,000 ranges from 82.9 in Massachusetts to none in Delaware and New Mexico. The governing factors here are probably the elaborateness of the custodial systems and the complexity of social organization, rather than inherent differences in mental health. This makes "raw" statistics of state hospital and general population extremely difficult to interpret. A close relationship between psychiatric and correctional problems is emphasized. The strictly physical nature of all mental disease is another fundamental thesis. The tendency is to discount hereditary factors, and to attach less importance than is now frequent, to psychogenic factors. The endocrines are regarded

as important, but apt to be secondary. "*Psychoses arise from a combination of many factors, some of which may be absent, but the most constant one is an intra-cerebral, bio-chemical, cellular disturbance arising from circulating toxins, originating in chronic focal infections situated anywhere throughout the body, and to some extent in disturbances of the endocrine system.*"

This theory of chronic focal infections in relation to mental disorder is the special contribution of the volume. The mechanism of these chronic infections and their systemic effects form a chapter highly interesting, but not for the hypochondriac. Dr. Cotton then proceeds to relate the group of "functional" psychoses to the effects of chronic infections, identifying them with the hitherto small group of "toxic" psychoses. The essential feature of treating such cases then becomes to find and remove the source of the infection. For the decade prior to 1918 the recovery rate found in these conditions was 37 per cent. Since this time and as a result of treatment based on "detoxication," a recovery rate of 77 per cent. has been observed. Of another most important toxic factor it is said that "prohibition has solved for us the problem of alcoholic insanity, and has lifted a heavy burden from the community as well as from the families of those who were alcoholics." Also for the "nervous" or neurotic individual the importance of physical causes is emphasized. Stress is also laid on the morale value to the patient of a physical explanation of distressing or stigmatizing mental symptoms.

It is natural to inquire how the establishment of such views as these would affect the structure of psychopathology. Considered purely in their psychopathological relations they are not unattractive. One of the chief conservative bulwarks against the growing recognition of psychogenic factors has been the summary dictum that these gave the "how" but not the "why." Among those critically sympathetic with psychoanalysis one does not always find a categorical acceptance of the dynamic value of mental factors in producing a cyclothymic or schizophrenic condition. A conception of the present type would go some distance towards answering the "why" and leave the "how" still mainly as psychopathology now formulates it. The mental symptoms of functional psychoses will remain what psychopathology now conceives them to be, extrusions from other levels of mental activity into the consciousness represented in overt action. Dr. Cotton's postulate is that such upheavals in our psychic structure can be brought about by chronic focal infections. Analogy may, perhaps, be had to the process of sleep, which releases in dreams "unconscious" activity of quite as rich disorganization, and with some topical similarity to the mental activities of the psychoses. No

claim seems made that specific types of intoxication are associated with specific types of "functional" disorder, in the sense of syphilis with general paralysis. Whether there is any psychotic reaction at all to the infection, and if so, what the type of psychotic reaction will be, appears a matter of the individual constitution.

Necessarily there are in a book of this kind, many points that the layman may scarcely criticize without impertinence. Dr. Cotton's results have not yet had sufficiently wide confirmation to bring about their general acceptance by psychiatric authority. For such an extensive testing of these hypotheses, Dr. Meyer pleads forcibly in his introduction, while plainly stating that the findings are beyond what his experience appears to be. It is a distinctly objective problem, not open to such difficulties of personal equation as apply in the case of psychoanalysis. Dr. Cotton's work is on its face, much more confidence-inspiring than the average presentation under psychoanalytic influence. This last has been an outstanding contribution to the psychiatry of the past decade. The subject-matter of this book is a not less worthy challenge.

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Sociology and Ethics: The Facts of Social Life as the Source of Solutions for the Theoretical and Practical Problems of Ethics.

EDWARD CARY HAYES. New York: D. Appleton and Co. 1921. Pp. viii + 354.

This essay aims to present sociology as the *scientific* ethics. All previous interpretations are to be superseded by "knowledge of the method of realizing our human possibilities discovered by scientists and seers and inwrought in the common sense and common sentiments of a society." (p. 5). Theological hypotheses were based upon the inadequately social concept of God; *a priori* speculation scorned the *facts* of human life. But now, with the coming of Sociology, we shall get away from "bad" philosophy—before Spencer and Comte—and view all things in the light of social causation. We shall explain everything by reference to the collection of psychophysical organisms and their natural conditioning. Whereupon, ethics is to become a natural science (p. 511).

After setting forth the advantages of an unconditioned determinism, the author proceeds to the crucial question: "What social order?" "Clearly no social order can be regarded as the standard since every social order must itself be measured" (p. 111). As answer, we are given the hypothesis (interestingly American) that the maximum of activity, the greatest *quantity* of human energy in

its various forms actualized constitutes the desired good. "The object attained by successful functioning, whatever that object may be, has worth only if that object itself be an activity or a means to be used by further activity" (p. 113). The five classes of activity-values are: (a) physical experience, represented by the comfort of warmth and ease, the exhilaration of muscular movement, the gratification of bodily appetites"; (b) esthetic pleasures; (c) "satisfactions that accompany the active exercise of the intellectual powers . . . the distinctive delight of the reader"; (d) social experiences; (e) personal satisfactions (pp. 129-35). The reason why Sociology does not aim to set up a qualitative "science of values" is "because the values of life are so accessible to ordinary experience, observation and inference and knowledge of them is so current in human intercourse" (p. 162).

One might, at this point, be inclined to ask: "Is not ethics precisely such an effort to determine qualitatively a scale of values by methods somewhat more penetrating and exact than rules of *thumb* current in ordinary experience?" And the question repeats itself persistently as one continues reading. The sanction for any given activity, according to our author, is a "consensus of the competent" with reference to "what men in their experience have called good." And this experience he regards as "incommensurable," "indefinable," "indescribable" as is the color red (p. 176). Yet somehow "social experience" teaches us "that conduct is right which is the condition of experience that is valuable." So that we may hope to realize good, presumably by the trial and error method, as definitely as natural science lays down the conditions under which crops may be raised or insects exterminated. The new common sense (by which the author means that which is common to the Zulu and Woodrow Wilson—p. 314) born of advancing science will provide extraordinary progress *somewhere*, though we know not whither and it will be accompanied by "more stirring poetry and nobler art than ever sprang from the cathedral-building mysticism of the mediævals" (p. 208). But . . . hands off for all save the natural scientists! "It (science) claims that the whole range of phenomena, mental as well as physical—the entire universe, in so far as it can be known by man—is its field" (p. 217).

The above will serve as examples of the reflections, facts, and inferences which the author presents. It confessedly "skirts the entrance to vistas which it does not penetrate" (p. vii). With the utmost generality and with no endeavor to base his conclusions upon systematic "facts," whether of sociology, history, religion, psychology or natural science, it seeks at once to deny the most potent

motives which have hitherto as a matter of fact determined men's actions, and to project a maximum of human activity of all sorts (perhaps also animal and molecular?) into a completely mechanized world. Unfortunately our author with his "free, critical, intelligence" rising superior to "illusion, speculation and faith" is yet unconvincing. The difficulty is not that one disagrees with most of his observations. They are not pertinent to his general conclusions. He can hardly be said to be aware of the problem of ethics, strenuously as he combats all the unnamed deluded, who have hitherto sought to *measure* values of human activity in relationship to the most inclusive data obtainable, data which, moreover, not a little "free, critical intelligence" has discovered. Perhaps as his programme develops he will be able to give us the sociological facts, statistics, experiments, to demonstrate how men have no longer any right to value the music of J. S. Bach or the outworn activity of inference other than that of counting heads.

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Psychology, A Study of Mental Life. R. S. WOODWORTH. New York: Holt, 1921. Pp. 10 + 580.

In this book the author has brought together the newer currents in the science and added them to the older contributions. The general attitude is much influenced by the behavioristic attitude and specifically by Watson's book, without, however, accepting the extreme statements. Consciousness is retained as a psychological category, and the introspective method is not discarded. Full recognition is given to the value of the objective method, that would be the exclusive method of behaviorism.

The order of treatment follows Watson as far as he goes. Woodworth begins with the nervous system, treated for function rather than for structure. The cuts are on the whole schematic. The native characters, instinct, emotion and feeling are treated next, and sensation, attention, intelligence, learning, and memory follow in order. Association is treated after memory, then follow perception, reasoning and imagination, and finally will and the self. This means that the plan is to proceed from the concrete to the abstract, rather than from the logically simple to the complex. It will be interesting to see how it works with the student. Each text and variation is an educational experiment and the only criterion is the pragmatic one.

Aside from the arrangement, the most original part of the book is the chapter on association in which the nervous processes involved

are developed from the conditioned reflex. The conditioned reflex itself is reduced to the general principle that when a well-developed response is made in the presence of a stimulus which is only loosely linked with that response, it is transferred from the stimulus that previously tended to excite it, to the new. A number of different forms of association are developed from this principle.

Woodworth makes peace with the formal logician, by translating the psychological processes into terms of the syllogism. To the reviewer the discussion neither of the association processes nor of the reasoning process seems particularly clear, possibly because he is not altogether convinced.

It is interesting to note that imageless thought is given rather a more subordinate position than the earlier discussions of the author would lead us to expect. It is made a relatively rare event in the thinking of the average individual. This of course may be for the sake of the student rather than an expression of any change in point of view of the author. Freud is mentioned frequently in the discussion of imagination and dreams, but nearly always to be refuted. The day-dream and worry are made concealed wishes in one or two of their aspects, but this seems to be the only positive influence that Freud has exerted upon the thought of the author.

The book should be a very useful text. The style is simple, usually colloquial, sometimes even slangy. It should offer no difficulty to the student except in a few places, and should please him, unless he feels occasionally that he is being written down to. At times it seems to the reviewer that more content might have been substituted for the illustration and elaboration that abound, but this is largely a matter of opinion, to be tested by use.

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JOURNALS AND NEW BOOKS

THE AMERICAN JOURNAL OF PSYCHOLOGY. XXXIII, 3. July, 1922. An Experimental Study of Certain Initial Phases of Abstraction: *H. B. English*. A Note on Wundt's Doctrine of Creative Synthesis: *E. B. Titchener*. Synæsthesia and Meaning: *R. H. Wheeler* and *T. D. Cutsforth*. Series of Difference Tones Obtained from Tunable Bars: *P. T. Young*. The Hydrogen Ion Concentration of the Mixed Saliva Considered as an Index of Fatigue and of Emotional Excitation, and Applied to a Study of the Metabolic Etiology of Stammering: *H. E. Starr*. Laughter, A Glory in Sanity: *R. Carpenter*. A Note on Henning's Smell Series: *F. L.*

Dimmick. Minor Studies from the Psychological Laboratory of Vassar College: *M. F. Washburn*, *M. T. MacDonald* and *D. Van Alstyne*.

LA CIENCIA TOMISTA. March-April, 1922. El primer manuscrito castellano sobre la vida y obras de Santo Tomás de Aquino: *Luis G. Alonso-Getino*. Responsio ad "Respuesta a un estudio histórico": *Reginaldus M. Schultes*. De la acción social: Los errores de monseñor Pottier: *M. Arboleya Martínez*. San Ignacio, mártir, y el Cristianismo primitivo (continuación): *José María García S. Grain*. Actuación del maestro Domingo Báñez en la Universidad de Salamanca (continuación): *V. Beltrán Heredia*.

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Johnson, W. E. Logic. Part II, Demonstrative Inference: Deductive and Inductive. Cambridge University Press. 1922. Pp. xx + 258.

Russell, Bertrand: Le Mysticisme et la Logique. Translated by Jean de Menasce. (Le mysticisme et la logique; L'étude des mathématiques; La méthode scientifique en philosophie; De l'idée de cause.) Paris: Payot et Cie. 1922. Pp. 159. 4 fr. 50.

NOTES AND NEWS

In 1920 an international society was founded at The Hague under the name of Societas Spinozana. The society has for its object the furthering of study of Spinoza's work and as part of its programme will print annually a journal, entitled *Chronicon Spinozanum*, which will publish articles in various languages on Spinoza's life and philosophy. This journal is not for sale, but is given free of charge to members of the society. Applications for membership are invited, and may be made to Mr. L. Roth of Exeter College, Oxford.

THE JOURNAL OF PHILOSOPHY

POINT, LINE, AND SURFACE, AS SETS OF SOLIDS¹

THE following pages contain a series of definitions of geometrical concepts, based upon the assumed entity "solid" and the assumed relation "can connect." The precise meaning to be attached to these fundamental terms could only be made clear by a set of geometrical postulates in which they were involved; but no such set will be provided. In explanation I would say that the object in view is not the construction of a geometry, but the bringing to light of a certain limited order of relationships. It is the possibility of a geometry, rather than the geometry itself that is to be exhibited.

The formal explanation of the assumed terms being omitted, it is necessary to give an informal explanation of them. The "solid," then, may be said to be *the space occupied by a physical solid*. This, of course, is no definition—the definition of a term assumed as fundamental is in any case out of the question—but a suggestion to the reader as to what the writer is thinking about. In the same way it may be said that the assumed solids are of all possible shapes, but that no acquaintance with any particular shape is to be taken for granted. Professor Huntington's remarkable system of geometry, in which the *sphere* is assumed as an indefinable, will sufficiently illustrate what the system here suggested is not.

The statement, that the "solids" may be of all possible shapes, is to be understood as subject to this limitation: the shape must in each case be one which a single physical solid can be conceived to have. The limitation is not absolutely necessary for our purposes. With a little modification the series of definitions would stand, even if we admitted the possibility that a particular "solid" might consist of a number of wholly disconnected parts; and without change in the definitions we might admit solids consisting of parts that are in contact only at points or along lines,—like a double cone whose parts are connected only at the vertex, or a combination of two cubes that have a common edge. But no real increase in generality would be

¹ This article may be regarded as an appendix to the account of the *Nature of Space*, published in recent numbers of this JOURNAL.

gained in this way; and the interests of simplicity would seem to recommend the limitation.

We shall have no occasion to make any distinction between a possible and an actual solid; every possible solid will be treated as actual. Consequently we shall meet with all manner of intersection of solids. They will pass into and through one another, as physical solids do not. It is true that parts of one and the same physical solid may be conceived as being each a physical solid; and these parts may interpenetrate to our hearts' content. But in the case of the solids with which we shall have to deal, we shall suppose that no matter which two of them be considered, there is a third that intersects them both, or even includes them both as parts.

With respect to their magnitude, it is to be said that all the solids that we shall assume are finite, and that none are of zero magnitude. We shall have no occasion either to affirm or to deny the existence of infinite solids. We shall assume that there are no zero solids. The contrary assumption might be made. But it would call for some changes in the definitions; though these would amount to a less profound modification of the system than might easily be supposed.

The solids which we are to consider are not endowed with motion. They are to be conceived as eternal beings. Our "constructions" will be literally no constructions: we shall but turn our attention to what was already there. Nevertheless, the relations that we shall study, and in particular the fundamental relation "can connect," could scarcely have been suggested but by the behavior of movable physical solids. More explicitly, if the physical solids *A* and *B* are at rest (relatively to the field of observation), and the solid *C* is such that we can manipulate it with a fair degree of freedom, to say that *C* can connect *A* and *B* would be understood to mean that we could, if we wished, put *C* in simultaneous contact with *A* and *B*; and it is, so to speak, the shadow of this physical relation that we shall assume for our geometrical solids.

Yet there are some noteworthy modifications of the relation, due especially to the free interpenetration of our solids. This will be made clear if, provisionally, we define the geometrical "can connect" in other terms. "*A* can connect *B* and *C*" is to be understood as meaning that there exists at least one solid *X*, such that *X* is equal in all its parts to *A*, and such that *X* has at least one point in common with *B* and at least one point in common with *C*. In other words, the "connecting" may be done *either by overlapping or by external contact*.

Accordingly, the physical relation "can connect" may easily fail to obtain, where in the analogous case the geometrical relation would

obtain. Suppose the physical solid *B* to be hollow; and suppose that *C* lies deep inside *B*. Then no physical solid *A*, that lies beside *B*, can possibly be made to connect *B* and *C*. But in the analogous case for geometrical solids, if *A* is only big enough, there is no trouble about its being "able" to do the connecting. Suppose further that the hollow physical solid *B* not only has *C* inside it but wraps it tightly around, so that they are in contact over the whole surface of *C*. Then there will, in general, be no physical solid that can be brought into simultaneous contact with them. In the analogous case for geometrical solids, any solid "could" do the connecting.

In the course of the development, a modified form of Professor Whitehead's method of "extensive abstraction" is introduced. The modification consists in the use, not of the relation of "extending-over" (the relation of whole to part), but of the relation of "containing," in the sense of not simply including as a part but completely enveloping. Through this modification the method is greatly simplified and strengthened. It is, I believe, impossible by means of the method in its original form to give a definition of the point in terms of the solid.²

If containing is assumed as a primitive relation, extending-over can easily be defined. Thus, to speak of solids, "*A* extends over *B*" can be explained as meaning: "There is a solid which is contained by *A* but not by *B*, and there is no solid that is contained by *B* but not by *A*." Hence the defining-power of the modified method is not inferior to that of the original. It is, in fact, much greater.

However, in the present treatment neither containing nor extending-over is assumed as primitive, but both are defined in terms of the relation "can connect." This mode of approach has the further advantage, that the conceptions of *length* and *collinearity* can be defined without the introduction of any additional indefinable. A complete conceptual foundation for geometry is thus provided.

With the definitions two postulates are included, which are of special importance for understanding the real significance of the definitions.

INDEFINABLES

Solid.—(Solids are to be denoted by capital letters. Different

² Cf. A. N. Whitehead, *The Concept of Nature*, p. 86f.; also a note by the present writer in the *Philosophical Review* for March, 1921. The definition of the point which I once offered as an illustration of Professor Whitehead's method (in a review of his "Principles of Natural Knowledge" in the *Philosophical Review* for May, 1920) involves both an error of interpretation and a serious blunder.

letters need not denote distinct solids. Classes of solids will, till further notice, be denoted by small letters.)

Can connect.

Postulates

Postulate of Identity: If A and B are such that there are no W and X , such that W can connect A and X but can not connect B and X ; and, similarly, there are no Y and Z , such that Y can connect B and Z but can not connect A and Z ; A and B are identical.

In other words, if A and B are alike in their capacity of being connected with other solids, they are identical.

Postulate of Measurement: If A and B are such that W and X exist, such that A can connect W and X but B can not, then there are no Y and Z such that B can connect Y and Z , but A can not.

When we have defined the expression "longer than" we may restate this principle in the form: If A is longer than B , B is not longer than A .

DEFINITIONS

I. If A and B are such that X exists, such that X can not connect A and B , A and B are said to be *disconnected*.

II. If A and B are not disconnected, they are said to be *connected*.

III. If A and B are such that every solid connected with A is connected with B , but not every solid connected with B is connected with A , A is said to be a *part* of B .³

IV. If A and B are not identical and have a common part, they are said to *intersect*.⁴

V. If A and B have no common part they are said to be *separated*.

The reader should note carefully the distinction between the terms "disconnected" and "separated." Any two solids that are disconnected are separated; but the converse is not true.

VI. If A and B are separated, but not disconnected, they are said to be *in contact*.

VII. If A is a part of B , and if every solid that is in contact with A intersects B , A is said to be *contained* in B .

We are now ready to proceed to the definition of the point by the method of extensive abstraction.

³ It is worthy of remark that the relation of whole and part can also be defined directly in terms of the relation can-connect. Thus we may say: If A and B are not identical, and if there are no X and Y such that X can connect A and Y and can not connect B and Y , A is said to be a part of B .

⁴ Here, and as often as possible below, I follow Professor Whitehead's terminology.

VIII. If a set of solids is such that

(1) of every two members of the set, one is contained in the other;

(2) there is no solid contained by every member of the set; it is called an *abstractive set*.⁵

The first specification shows that the abstractive set is like a *nest of boxes*, one within another; except, to be sure, that whereas each smaller box lies within the hollow interior of the larger box, each smaller solid of the abstractive set is a part of the larger solid. The second specification shows that the abstractive set is an unending sequence of solids. There can not be a smallest solid of the set; because, if there were, any solid which it contained would be contained by all the solids of the set.

In ordinary terms we would say that the abstractive set must converge upon a point, a line or curve, a surface, or some combination of lines and surfaces. We have not assumed the existence of such entities as points, lines, and surfaces, and so can not use them for the definition or classification of abstractive sets. It will be shown how abstractive sets may be used for the definition of points, lines, and surfaces.

As an example of an abstractive set, the reader may consider a set of concentric spheres, growing less and less *ad infinitum*—never reaching nothingness but approaching it as a limit. Or, in place of the spheres, we might have, say, concentric cubes. Again, we might have a set of co-axial cylinders, diminishing in such a way that the radius approaches zero, while the altitude approaches a limit which is not zero. Yet again, we might have a set of rectangular parallelopipeds, diminishing so that one dimension approaches zero, while each of the other dimensions approaches a limit which is not zero.

IX. If m is an abstractive set, the class of the solids that contain members of m is called an *abstractive element*, or simply an *element*.

X. If two abstractive elements are not identical, and one logically includes the other, the former is said to *lie in* the latter.

Note that different abstractive sets may serve to define the same abstractive element. To return to the above examples, if the set of the concentric cubes and the set of concentric spheres have the same center, every solid that contains one of the cubes will contain one of the spheres; and conversely, every solid that contains a sphere will

⁵ This definition departs from Professor Whitehead's by substituting the relation of containing for that of including as a part. There is the further difference, that the sets with which he deals are not sets of solids but sets of four-dimensional events.

contain a cube. Thus the set of cubes and the set of spheres determine the same element.

On the other hand, consider the case of a set of co-axial cylinders, such as was suggested above, and a set of concentric spheres whose center lies in the midst of the common axis of the cylinders. Every solid that contains one of the cylinders will contain one of the spheres; but there will be solids that contain some of the smaller spheres but do not contain any of the cylinders. Hence the class of the solids that contain members of the set of spheres logically includes the class of the solids that contain members of the set of cylinders. It is in such a case that, in accordance with Definition *X*, we say that the one class lies in the other.

XI. A *point* is an abstractive element in which no other abstractive element lies.

It will be observed that the point is here defined as the class of those solids which would ordinarily be described as containing the point—that is to say, the point would lie in each solid, but not in its surface. The formal properties of the point as here defined are easily seen to be identical with those of the point conceived as an irreducible individual.

The following definitions are much less important and increase rapidly in difficulty. The reader who so desires may pass at once to the concluding remarks.

Hereafter abstractive elements, as well as solids, will be denoted by capital letters.

XII. If the solid *A* is a member of the point *P*, *P* is said to be *contained* in *A*.

This use of “contained” will be found to be closely analogous to its use as denoting a relation between two solids. Thus no serious ambiguity is involved.

XIII. If every solid that contains the solid *A* contains the point *P*, *P* is said to *lie* in *A*.

This definition may be extended so as to embrace the analogous relation between a solid and any abstractive element. The present definition may also be stated: If the class of solids that contain the solid *A* is logically included in the point *P*, *P* is said to lie in *A*.⁶

It will be observed that the relation between solid and point (or other element), which is here defined, is closely analogous to the relation “to lie in” subsisting between two abstractive elements (Definition *X*).

⁶ An alternative definition that is worthy of notice is this: If no solid that contains the point *P* is disconnected with the solid *A*, *P* is said to lie in *A*.

XIV. If the point P is a member of the set of points m , and there is a solid that contains P and contains no other member of m , P is said to be *isolated* in m .

Note that if m has but one member, that is an isolated member.

XV. If a point P is not a member of the set of points m , but every solid that contains P contains members of m , P is said to be *adjacent* to m .

Consider, for example, the set of the points that lie in a straight line PQ , between the extremities P and Q . Both P and Q are adjacent to this set.

XVI. If a set of points m is included in a set n , and there is a member of m which is not adjacent to the set of those points which are members of n but not of m , m is said to be *divergent* in n .

Thus suppose n is the set which includes the points within a circle, those in its circumference, and those in a line tangent to the circle; and suppose m is the set of the points in the tangent. Then, except the point of tangency, no member of m is adjacent to the set of the points that are in n but not in m ; and accordingly m is divergent in n .

XVII. If a set of points includes no isolated points, and has no points adjacent to it, it is said to be *perfect*.

This definition is substantially in accord with Cantor's metrical definition of the term. What it really amounts to depends, of course, on the existential postulates that determine the universe of solids. It should be observed that a perfect set may consist of several parts that are in no wise connected with one another.

XVIII. If a perfect set is such that every perfect set which it includes is divergent in it, it is said to be a *one-dimensional* set.

XIX. If a perfect set is such that no one-dimensional set which it includes is divergent in it, it is said to be a *doubly perfect* set.

XX. If a doubly perfect set is such that every doubly perfect set which it includes is divergent in it, it is said to be a *two-dimensional* set.

XXI. If a doubly perfect set is such that no two-dimensional set which it includes is divergent in it, it is said to be a *trebly perfect* set.

XXII. If a trebly perfect set is such that every trebly perfect set which it includes is divergent in it, it is said to be a *three-dimensional* set.⁷

⁷ While the order of Definitions XVII-XXII is fixed, the statement of them may be conveniently consolidated as follows:

If a set of points $\left\{ \begin{array}{l} \text{has no point adjacent to it} \\ \text{is perfect} \\ \text{is doubly perfect} \end{array} \right.$ and includes no $\left\{ \begin{array}{l} \text{isolated} \\ \text{divergent} \\ \text{divergent} \end{array} \right.$

It should be observed that if the set of all points is three-dimensional, every trebly perfect set is three-dimensional.

XXIII. If a $\left\{ \begin{array}{l} \text{perfect} \\ \text{doubly perfect set of points is such that it includes} \\ \text{trebly perfect} \end{array} \right.$

no two $\left\{ \begin{array}{l} \text{perfect} \\ \text{doubly perfect sets that exhaust its members and them-} \\ \text{trebly perfect} \end{array} \right.$

selves include $\left\{ \begin{array}{l} \text{point,} \\ \text{perfect set,} \end{array} \right.$ it is said to be $\left\{ \begin{array}{l} \text{continuous.} \\ \text{doubly continuous.} \\ \text{trebly continuous.} \end{array} \right.$
no common $\left\{ \begin{array}{l} \text{doubly perfect set,} \end{array} \right.$

XXIV. If a $\left\{ \begin{array}{l} \text{one-dimensional} \\ \text{two-dimensional} \\ \text{three-dimensional} \end{array} \right.$ set of points is $\left\{ \begin{array}{l} \text{continuous,} \\ \text{doubly continuous,} \\ \text{trebly continuous,} \end{array} \right.$

it is said to be a $\left\{ \begin{array}{l} \text{one-dimensionally continuous} \\ \text{two-dimensionally continuous set.} \\ \text{three-dimensionally continuous} \end{array} \right.$

The two following definitions are somewhat aside from the purpose of the present discussion; but they are given here because of their utility in serving to define various types of lines and surfaces.

XXV. If two sets of points have no common member, and are such that there is no continuous set that includes members of both but no other points, the two sets are said to be *disjoined*.

XXVI. If a set of points p (which may consist of one point P) and a continuous set m have a common member or members, and the remaining members of m consist of two disjoined sets, p is said to *divide* m ; and if, further, no set included in p (not identical with it) divides m , p is said to *divide* m *economically*.

One-dimensionally continuous sets may now be classified according as they are divided (i) by any one of their points; (ii) by any one of their points except one; (iii) by any except two; (iv) by any two, but by no one; *etc.* Similarly, various types of two-dimensional sets may be characterized by the number and type of the one-dimensional sets that divide them.

It has become common in recent years to regard the line and the surface—and, indeed, the solid also—as sets of points. From

$\left\{ \begin{array}{l} \text{point,} \\ \text{one-dimensional set,} \\ \text{two-dimensional set,} \end{array} \right.$ it is said to be $\left\{ \begin{array}{l} \text{perfect.} \\ \text{doubly perfect.} \\ \text{trebly perfect.} \end{array} \right.$

If a set of points is $\left\{ \begin{array}{l} \text{perfect,} \\ \text{doubly perfect, and every} \\ \text{trebly perfect,} \end{array} \right.$ $\left\{ \begin{array}{l} \text{perfect} \\ \text{doubly perfect set which it} \\ \text{trebly perfect} \end{array} \right.$

includes is divergent in it, it is said to be a $\left\{ \begin{array}{l} \text{one-dimensional} \\ \text{two-dimensional set.} \\ \text{three-dimensional} \end{array} \right.$

that standpoint, the definition of the one-dimensionally continuous set may be taken as the definition of the line; and the definition of the two-dimensionally continuous set (or, if it be preferred, the continuous two-dimensional set) may be taken as that of the surface. Professor Whitehead, however, has shown that the line and the surface may be regarded as abstractive elements. The following definitions apply to them in that capacity.

XXVII. If an abstractive element is such that the set of the points which lie in it is one-dimensional, it is called a *line*.

XXVIII. If an abstractive element is such that the set of the points which lie in it is two-dimensional, it is called a *surface*; and if, further, the set is doubly continuous, the surface is said to be *unitary*.⁸

Does the figure 8 bound one surface or two? According to this definition, it bounds one surface, but that is not a unitary surface.

We now proceed to some metrical conceptions. The development follows closely the lines laid down in the second article of this series (pp. 428-9). In some cases no change in the definitions there given is called for; in other cases, only the omission of all reference to "chains" of solids. The reader is, therefore, hereby referred to the earlier discussion. In the case of the definition of the sum of two lengths, however, a more serious revision is necessary.

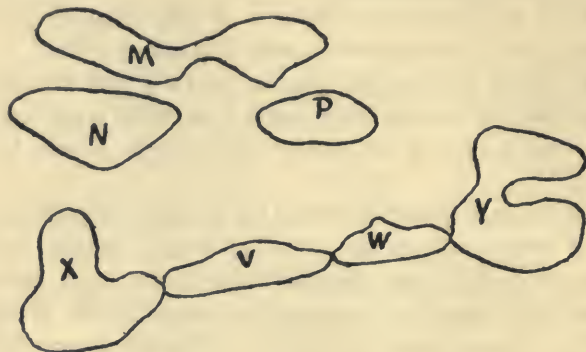
- | | |
|---|---|
| XXIX (a) <i>Farther apart.</i> | (b) <i>Longer.</i> |
| XXX (a) <i>Just as far apart.</i> | (b) <i>Just as long.</i> |
| XXXI (a) <i>Distance.</i> | (b) <i>Length.</i> |
| XXXII (a) <i>Greater (of distances).</i> | (b) <i>Greater (of lengths).</i> |
| XXXIII (a) <i>Equal (distance to length).</i> | (b) <i>Equal (length to distance).</i> |
| XXXIV (a) <i>Greater (distance compared to length).</i> | (b) <i>Greater (length compared to distance).</i> |

XXXV. If *A* and *B* are such that there is no solid *X* such that *X* can not connect *A* and *B*, the distance between *A* and *B* is said to be *zero*.

⁸ These definitions are somewhat wider than those which Professor Whitehead has given, and I believe are better in accord with the tradition and the needs of the science. For example, according to Professor Whitehead, there is no complete spherical surface except in the sense of a set of points. The reason is that Professor Whitehead is hampered by limitations upon the possible shape of the four-dimensional entities—events—which his system uses as its basis. (Cf. *The Concept of Nature*, pp. 101ff.)

In many cases *hollow* solids are required for the abstractive sets upon which surfaces are founded. That is the case with the spherical surface, for example. Similarly, for the abstractive sets upon which lines are based, *ring-shaped* solids are often needed. But such cases offer no peculiar difficulty.

This is the relation that was earlier expressed by saying that *A* and *B* were *connected*. We might define a zero-length as the length of a solid which can not connect any solids except those the distance between which is zero. But we are not to assume the existence of such solids. If we did, we should very naturally reserve for them the name of "points."



XXXVI. (b) If *M*, *N*, and *P* are such that *X* and *Y* exist, such that the distance between *X* and *Y* is equal to the length of *M*, and such that *V* and *W* exist such that *V* is just as long as *N*, and *W* is just as long as *P*; and if the distances between *X* and *V*, *V* and *W*, and *W* and *Y* are zero; and if no solid *M'* exists, such that *M'* is longer than *M* and stands in this same relation to *N* and *P*; the length of *M* is said to be the *sum* of the lengths of *N* and *P*.

XXXVI. (a) *Sum* (of two distances).

In the same way, we may define the sum of any number of lengths or of distances, or of both lengths and distances. The sum of a length and a distance may, by convention, be regarded as a distance.*

* Attention may be called to the fact that these metrical definitions are entirely independent of those which precede them in the present series, for they go back directly to the indefinable relation, "can connect." Accordingly, it is possible, and for some purposes it may be advantageous, to substitute metrical definitions of the relations of whole and part, containing, etc., and these deserve a passing mention.

(In place of Definitions II and I.) If the distance between *A* and *B* is zero, they are said to be *connected*; otherwise they are said to be *disconnected*.

(In place of Definition III.) If *A'* and *B* are such that *X* does not exist such that the distance between *B* and *X* is greater than the distance between *A* and *X*; and if *Y* does exist such that the distance between *A* and *Y* is greater than the distance between *B* and *Y*; *A* is said to be a *part* of *B*.

In other words, if no solid is farther from *B* than from *A*, and there is a solid that is farther from *A* than from *B*, *A* is a part of *B*.

The distance between a point and a solid, and the distance between two points require special treatment.

XXXVII. If the point A and the solids B and C are such that C can connect B and any member of A , but for all values of C' , where C' is a solid and C is longer than C' , there is a member of A which C' can not connect with B ; the *distance* between A and B is said to be the distance which is equal to the length of C .

XXXVIII. If the points A and B and the solid C are such that C can connect any member of A and any member of B ; but for all values of C' , where C' is a solid and C is longer than C' , there is a member of A and a member of B which C' can not connect; the *distance* between A and B is said to be the distance that is equal to the length of C .

The definition of the between-relation and of collinearity is now effected as in the first article of this series.

XXXIX. If the points A , B , and C are distinct, and are such that the distance between A and C is the sum of the distances between A and B and between B and C ; B is said to be *between* A and C .

XL. If either the point A is between the points B and C , or B is between A and C , or C is between A and B , the three points are said to be *collinear*.

The straight line, as an abstractive element, may now be defined.

XLI. A *straight* line is a line such that every three points that lie in it are collinear.

Are there straight lines of infinite length? That depends upon the question whether there are solids of infinite length; which in a Euclidean geometry is as much as to ask whether there are solids that can connect any two solids whatsoever. It is of very slight importance whether an affirmative or a negative answer is assumed.

A matter of far greater importance is the "fixing" of the straight line by any two of its points. This amounts to the proposition, that if the points A , B , and C are collinear, and the points A , B , and D are collinear, then A , C , and D are collinear. In the choice of postulates upon which a system of geometry is to be founded, this is one of the essential aims to be held in view.

(In place of Definition VII.) If A and B are such that no X exists such that X is separated from A and such that the distance between A and X is not greater than the distance between B and X ; A is said to *contain* B .

The definition of abstractive sets and elements may be left unchanged. The following suggests itself as the appropriate metrical definition of the point:

(In place of Definition XI.) If an abstractive element A is such that for every solid X there is a member of A that is not longer than X , A is called a *point*.

What, now, is the philosophical significance of this, or an equivalent, series of definitions. And, in particular, what significance has the identification of the point with a class of solids? I believe it to be considerable, but that it is open to serious misinterpretation.

Recent theories with respect to the relation between geometry and mechanics have given rise to a demand for the definition of the point in definitely experiential terms. For points are not primary data of experience—if there are such data. They are never perceived by us, and their existence is never made evident by any distinguishable effect, however delicate, of their presence. We can not infer their existence from the perturbation of the orbit either of a planet or of an electron. They are conceptual constructs; and it is a problem for analytical science to exhibit the mode of their construction.

On its face, the method of extensive abstraction is an application of "Occam's razor." Instead of the point, which we do not perceive, we are given a class of solids such as we do perceive; and thus entities are not multiplied unnecessarily. But the point, as we find it in geometrical tradition, is not an altogether distinct kind of entity. It is a solid, remarkable in only one fundamental respect, namely, that its length is zero. To be sure, no solids of zero length are perceived by us; but we could not perceive them if they existed. And, furthermore, although we perceive solids, we perceive no abstractive sets of solids; and there is no indirect empirical assurance that such sets exist—only suggestive evidence that entitles us to assume that they exist. In accepting the abstractive set, we are as veritably going beyond experience as in accepting the solid of zero-length.

It may be replied that the assumption of the abstractive set is in any case more economical than that of the zero-solid, because if there are zero-solids there are abstractive sets, while there may be abstractive sets without zero-solids. But this statement, I believe, is only superficially correct. Just because the zero-solid is an entity that lies beyond the limits of any possible direct or indirect perception, the assumption of its existence means less than the formal proposition indicates. A real point (as I have elsewhere had occasion to urge) means no more or less to us than a possible point. Hence the method of extensive abstraction has not so much eliminated the zero-solid as it has analyzed it. The method has made us realize more distinctly than ever before what the assumption of the zero-solid logically amounts to.

Thus, if I am right, the method of extensive abstraction simply gives us one more illustration of Galileo's great principle: that the

laws of physics—among which the laws of geometry may here be included—are descriptions of ideally simple cases, which no experience presents to us, but which the objects of our experience do with various degrees of closeness approach. The formal elimination of the limit itself, in the case of geometry, and the statement of the laws in terms of an infinitely continued approximation, only brings out with a new clearness what their real nature has always been. I say it does only this; but is not that sufficient?

Meanwhile we ought not to forget that the geometrical solid itself is not given in experience.¹⁰ It, too, is the product of an idealization—if not individually, then as a member of its class. If we say that the physical solid is a geometrical solid and more, we forget that no perception assures us that it has the most elementary properties of a geometrical solid; for those properties are relative to the existence of other geometrical solids which are *not* physical solids. As of the point, so we must say of the geometrical solid itself: the distinction between the possible and the actual has no place. To define the point as a class of solids is *not* to find a place for it in the real world. That can only be done by analyzing those properties of the physical solid upon which geometry, as an empirical science, is founded.

If the point can be conceived as a set of solids, so the solid—the geometrical solid—can be conceived as a set of points. So far as the formal logical relations are concerned, there is not a particle of advantage in the matter, either on the one side or on the other. Historically, as I have elsewhere urged, the conception of space had to wait upon the development of the point. Psychologically, the point has this advantage over the geometrical solid: that its very smallness accounts sufficiently for its absolute imperceptibility, and it is thus able to serve as a middle term for the thought-transition from the physical to the geometrical solid. Practically, it is the point that gives space its excuse for being. A space without points would be little more than an obstacle between us and the physical world.

Every new scientific perspective is valuable; and the method of extensive abstraction has given us a new perspective of very great value indeed. But we must not let ourselves fall into the illusion that the novel order which it presents is truer, or necessarily more fundamental, than that which has long been familiar to us.

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¹⁰ I should, of course, say the same of Professor Whitehead's "events."

DOING WITHOUT DISTRIBUTION IN FORMAL LOGIC

IN the following paragraphs I shall maintain that it is feasible to expound formal logic without making any use of the notion of a distributed term; that the exposition is, indeed, simpler and more readily understood without the doctrine of distribution than with it. Lest this should be regarded as a recantation, let me remind anyone who may have read my article on "The Distribution of the Predicate,"¹ that I expressly reserved judgment concerning the pedagogical utility of the doctrine of distribution, while defending its validity against the destructive criticism of Professor Toohey in his *Elementary Handbook of Logic*. If one succeeds in mastering them, the rules of distribution very conveniently sum up certain of the conditions of validity in conversion and the categorical syllogism. Beginners in the study of logic, however, find the notion of a distributed term exceedingly difficult, and usually apply the rules in a very mechanical fashion. If, then, some alternative tests of validity can be devised which will be easier for the learner to understand, and more nearly in accord with the way in which he naturally tries to "reason out things," the rules of distribution may wisely be laid on the shelf.

By a slight change in the customary order of exposition I have found it possible to get along very well without distribution. This change consists in discussing the hypothetical syllogism before taking up immediate inference and the categorical syllogism, both of which may then be explained in the light of the principles of hypothetical reasoning. That in a general way the categorical and the hypothetical forms of reasoning are equivalent is not, to be sure, a new idea. The traditional view has been, however, that the categorical argument is somehow the normal and natural form; that the categorical syllogism should therefore be explained first; and that the hypothetical should then be shown to be equivalent to the categorical. My suggestion is that in presenting formal logic to beginners this traditional order of exposition should be reversed.

1. *Testing the Validity of Conversion*.—Of the various forms of "immediate inference," the only one which we need to consider is conversion; for it is the only one to which the rule of distribution is applicable. In my former article I advanced the view that a term is not distributed or undistributed absolutely, but only with respect to some other term. Now, in inversion the subject of the original proposition is replaced by its contradictory. In the case of the partial inverse, accordingly, where the rule of distribution seems to

¹ This JOURNAL, Vol. XVII, pp. 519-522.

be violated, the rule is really irrelevant. "All S is P ," being the original proposition, and "Some non- S is not P ," the partial inverse, it is true that P is distributed in the inverse and undistributed in the invertend; but in the invertend it is undistributed with respect to S , while in the inverse it is distributed with respect to non- S ; and from lack of distribution with respect to S we have no right to infer lack of distribution with respect to non- S . Indeed, as Mr. Hammond points out,² if non- S exists (that is to say, if the inversion of "All S is P " is possible), P is distributed with respect to non- S in the original proposition as well as in the partial inverse. If, then, we remember that distribution is a relative notion, that a given term may be distributed with respect to one term and undistributed with respect to another, it is manifest that the rule of distribution is relevant to no form of immediate inference except conversion; since in all the other forms,—obversion, contraposition, inversion,—we change one or both of the terms of the original proposition. In the case of conversion, however, the rule is pertinent. *Neither term of the converse may be distributed with respect to the other, unless in the convertend it was distributed with respect to the same term.* Professor Toohey, it must be conceded, is quite right in maintaining that the attempt to prove the validity of any given process of conversion by simply appealing to this rule would involve us in a circle. The rule of distribution as applied to conversion is not an independent proposition, but rather a corollary from the demonstration of the validity of the processes in question. Nevertheless, admitting this to be its status, it serves as a convenient summary of what is possible and what is impossible in the simple conversion of the four types of the categorical proposition, A , E , I , and O .

If, then, we are to expound conversion without using the notion of distribution, we ought to find another way of summing up these results which is at least equally convenient. This, as I have said, is afforded by the possibility of reducing our propositions to the hypothetical form.

The question is, which of our four typical propositions can be converted simply. Consider first the E proposition, "No S is P ." Its simple converse is, "No P is S ." We wish to prove that we can pass from the truth of either of these to the truth of the other. Now the hypothetical equivalent of the former is, "If x is S , x is not P ," while that of the latter is, "If x is P , x is not S ." And it is evident by the principle of the *modus tollens* that the truth of either of these hypothetical propositions may be inferred from that of the other. Consequently the first of the categorical propositions implies the

² This JOURNAL, Vol. XIX, p. 127.

second, and *vice versa*. If, however, we attempt to convert the *A* proposition simply, we should pass from, "All *S* is *P*," to "All *P* is *S*." Now these propositions are equivalent respectively to the hypotheticals, "If *x* is *S*, *x* is *P*," and, "If *x* is *P*, *x* is *S*." But these are not equivalent to each other; for the attempt to pass from the truth of one to the truth of the other involves the fallacious principle of the "affirmation of the consequent." Consequently the first of these categorical propositions does not imply the second, nor the second the first. Therefore, simple conversion is *not* valid in the case of the *A* proposition.

Granted the results just established for *E* and *A*, granted also the principle of the "square of opposition," it is easy to show whether or not *I* and *O* may be converted. Let *E'* be the simple converse of *E*, *I'* of *I*, etc. Then, if *I* be true, *E* is false, *E'* is false, and *I'* is true; while, if *I* be false, *E* is true, *E'* is true, and *I'* is false. In other words, from the truth of *I* we can infer the truth of *I'*, and from the falsity of *I* the falsity of *I'*. Therefore, the *I* proposition is convertible. In like manner, if *O* be true, *A* is false, *A'* may or may not be false, and *O'* may or may not be true; while, if *O* be false, *A* is true, *A'* may or may not be true, and *O'* may or may not be false. In other words, we have no right to reason confidently from the truth or the falsity of *O* to the truth or the falsity of *O'*. Therefore the *O* proposition is *not* simply convertible.

These results may be stated briefly in the formula that the simple conversion of *E* is analogous to the denial of the consequent, and that of *A* to the affirmation of the consequent in the hypothetical syllogism; while, as regards simple conversion, the case of each of the particular propositions is the same as that of its contradictory.

2. *Testing the Validity of the Categorical Syllogism*.—If distribution is a relative notion, the rules of distribution in the case of the categorical syllogism become, "Neither term of the conclusion may be distributed with respect to the other, unless in its premise it was distributed with respect to the middle term"; and, "The middle term must be distributed with respect to at least one of the other terms." These rules, as necessary (but not sufficient) conditions of validity, proceed from the relations of inclusion and exclusion upon which the categorical syllogism is founded. For the sake of brevity I employ the letters, *S*, *M*, and *P* to indicate, not only the three terms of the syllogism, but also the classes denoted respectively by those terms.

The first rule is evident, then, from the following considerations: (a) To prove that *S* is wholly within (or without) *P*, we must know that *M* is wholly within (or without) *P* and that *S* is wholly within

M. (b) To prove that *P* is wholly without *S* (or a part of *S*), we must know that *P* is wholly without *M* and that *M* includes (at least a part of) *S*.

The necessity of the condition prescribed by the second rule is, if possible, even more obvious. The rule requires, in effect, that if *M* is not distributed with respect to *P*, it must be distributed with respect to *S*. Now suppose that *M* is not distributed with respect to *P*. Then so far as our information goes, *M* may be partly within and partly without *P*. In this case, however, it is evident that the knowledge that *S* is wholly within *M* would not justify any conclusion as to the relation of *S* to *P*, since *S* might not be contained (even partly) in the part of *M* which is within *P*. On the other hand, the knowledge that *S* is wholly *without* *M* would justify a conclusion, other conditions being fulfilled,—for that which is without *M* must also be without the part of *P* which is included within *M*. But in this case, in the only case in which a conclusion is possible when *M* is undistributed with respect to *P*, *M* is distributed with respect to *S*.

It is clear, then, that the notion of distribution, which is irrelevant in the case of the partial inverse, is applicable not only to the converse but also to the categorical syllogism. It is, accordingly, with a certain degree of bewilderment that I read Mr. Hammond's comment that I am "quite right in pointing out that the distribution of a term is not an absolute matter," but that Professor Toohey is also "quite right in maintaining that to make a term distributed or undistributed relatively to some other term and to deny any pertinency to this distribution elsewhere is equally to take all value from distribution." To say that a rule or concept is irrelevant in one specific situation is obviously not the same as to say that it is irrelevant all along the line.

If, then, we are to expound formal logic without making any use of the notion of a distributed term, we ought to find a substitute for such of the traditional rules of the syllogism as involve this notion. This we find in the reduction of all categorical syllogisms to the hypothetical form, when they may be tested by the rules of the hypothetical syllogism. Syllogisms of the third or of the fourth figure are, of course, readily reducible by the conversion (or partial contraposition) of the minor premise to the first or the second figure. It remains to show with what ease we may then complete the reduction to the hypothetical form. Consider these moods of the first figure:

All <i>M</i> is <i>P</i>	All <i>M</i> is <i>P</i>	All <i>M</i> is <i>P</i>	All <i>M</i> is <i>P</i>
All <i>S</i> is <i>M</i>	No <i>S</i> is <i>M</i>	Some <i>S</i> is <i>M</i>	Some <i>S</i> is not <i>M</i>
All <i>S</i> is <i>P</i>	No <i>S</i> is <i>P</i>	Some <i>S</i> is <i>P</i>	Some <i>S</i> is not <i>P</i>

Let us now throw the common major premise into the hypothetical form. "All M is P ," is equivalent to, "if x is M , then x is not P ." Let x equal "any S ." We now have:

If any S is M , then it is P

All S is M	No S is M	Some S is M	Some S is not M
All S is P	No S is P	Some S is P	Some S is not P

It is clear that only the first and third are valid. Next consider several moods of the first figure which have a major premise of type E :

No M is P	No M is P	No M is P	No M is P
All S is M	No S is M	Some S is M	Some S is not M
No S is P	No S is P	Some S is not P	Some S is not P

"No M is P ," is equivalent to, "if x is M , it is not P ." Again let x equal "any S ." We now have:

If any S is M , then it is not P

All S is M	No S is M	Some S is M	Some S is not M
No S is P	No S is P	Some S is not P	Some S is not P

Here, again, it is clear that only the first and the third are valid.

The valid moods of the first figure are then equivalent in each case to a hypothetical syllogism in which the minor premise affirms the antecedent. In other words, the first figure of the categorical syllogism, if valid, reduces to the *modus ponens*. We shall now show that if the second figure is valid it reduces to the *modus tollens*. We shall prove this for but one mood, leaving it to the reader to prove it for the rest.

No P is M = If any S is P , it is not M

All S is M	All S is M
No S is P	No S is P

We notice that the minor premise disagrees with the consequent of the major. The syllogism is therefore valid,—a *modus tollens*.

No mood has been examined in which the major premise is particular. Suppose the major premise to be, "Some M is P ." Thrown into hypothetical form this would give us nothing stronger than, "If x is M , then x may be P ," or, "If x is M , there is a certain degree of probability that it is also P ." But from a major premise no stronger than this, no trustworthy inference can be drawn. Accordingly, if the major premise is particular and the minor universal, the premises should be transposed; while if there is no universal premise, the syllogism is invalid. On the other hand, if there are two universal premises, and with one of them as

major the syllogism appears to be invalid, the premises should be transposed; for in a few cases the syllogism will be found valid when one of the universal propositions is chosen as major premise, although apparently invalid if the other is taken.

It may now be helpful to recapitulate the steps which have been proposed. In each case as many are to be employed as may be necessary.

1. If the major premise is particular, transpose the premises. (The transposition of the premises obviously requires the conversion or the contraposition of the conclusion.)

2. If the syllogism is of the third or the fourth figure, reduce it to the first or the second, as may be the more convenient. In some cases this can be accomplished most readily by converting (or contraposing) the minor premise; in others by transposing the premises.

3. Reduce the syllogism thus obtained to the hypothetical form.

4. Test it by applying the rule of the hypothetical syllogism.

5. If the syllogism has two universal premises, and the test indicates invalidity, transpose the premises, and repeat the test.

Not only is it possible in this way to avoid the use of the difficult notion of a distributed term, but by applying the principles of hypothetical reasoning the other rules of the categorical syllogism may be established:

1. In every valid categorical syllogism there are three terms, and only three; for otherwise there would be no term common to both premises, and in the equivalent hypothetical syllogism, the minor premise, instead of affirming the antecedent or denying the consequent of the major, would be entirely irrelevant, *i.e.*, would say nothing about the major premise at all.

2. If both premises are affirmative, the conclusion must be affirmative; for it is evident that the corresponding hypothetical syllogism, if valid, will be a *modus ponens*.

3. If both premises are negative, the syllogism is invalid. For the major premise will then be equivalent to, "If x is A , then x is not B "; and, as the minor premise is also negative, it can neither agree with the antecedent nor disagree with the consequent of the major.

4. If either premise is negative, the conclusion must be negative. Suppose it is the major premise which is negative. Then, if the equivalent hypothetical syllogism is valid, the minor premise must either agree with the antecedent of the major, in which case the conclusion must agree with the consequent; or the minor premise must disagree with the consequent, in which case the conclusion

must disagree with the antecedent. But in either case the conclusion must be negative. On the other hand, if it is the minor premise which is negative, the syllogism must be a *modus tollens*, and the conclusion will be negative.

5. If both premises are particular, the syllogism is invalid. We have already seen that in the first and second figures the major premise must be universal; and there is no way by which a syllogism with two particular premises can be reduced to an equivalent syllogism having a universal premise.

6. If either premise is particular, the conclusion must be particular. For, when the syllogism is reduced to the first or the second figure, the particular premise will be the minor premise, and its subject will be the minor term and consequently also the subject of the conclusion.

With a little practice the student will learn to tell by inspection, without completing the reduction to the hypothetical form, whether a given syllogism is valid or invalid. In general, if there is a universal premise of which the middle term is the subject, and the other premise is *affirmative*, the syllogism is, or may readily be reduced to, a valid syllogism of the first figure. If, however, after the syllogism has been reduced to the first figure, the minor premise is *negative*, the syllogism is *invalid*. For it is clear that an affirmative minor premise in the first figure will affirm the antecedent, while a negative minor premise will deny the antecedent when the major premise is expressed in hypothetical form.

Likewise, if there is a universal premise of which the middle term is the predicate, and the premises *differ in quality*, the syllogism is, or may readily be reduced to, a valid syllogism of the second figure. If, however, after the syllogism has been reduced to the second figure, the premises do not differ in quality, the syllogism is *invalid*. For if the premises differ in quality it is clear that when the major premise is expressed in hypothetical form the minor premise will deny the consequent; while if the premises are of the same quality, it will affirm the consequent.

My position is, then, that the doctrine of distribution is valid, but that for pedagogical reasons it may well be dispensed with. By adopting the order of exposition outlined in the preceding paragraphs, the "deductive" part of logic is given a unity and inter-connectedness such as is not otherwise attainable. An incidental advantage—which has already been hinted at—is that the forms of thinking employed in the exposition are more nearly akin to those of other sciences and of everyday life. The rules of distribution are not likely to be used outside the class-room devoted to the study

of formal logic. On the other hand, the hypothetical forms of reasoning are employed every day, everywhere. They are "identical elements" in many diverse intellectual operations.

This method of exposition is, of course, not wholly new. Mr. L. J. Russell, for example, approximates it very closely in his *Logic from the Standpoint of Education*. But even he—whether because of deference to tradition or for some other reason—presents the hypothetical syllogism *after* the categorical. And most of the textbooks proceed on the assumption that the categorical type of argument is somehow the genuine, true and fundamental type, of which the hypothetical is but a more or less unwieldy derivative; as witness the desperate efforts of Jevons and others to reduce all hypothetical propositions to the categorical form. Is it not simpler to reverse the traditional order, to treat the hypothetical as the generic type, of which the categorical is a specific modification? There may be some recondite objection to this procedure; but until it is pointed out, the simpler organization of the subject-matter appears to be preferable.

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BOOK REVIEWS

Human Nature and Conduct: An Introduction to Social Psychology.

John Dewey. Henry Holt & Co. 1922. Pp. 336.

If pragmatism is not the sanctification of commercialism, and of course no one soberly supposes that it is, it may none the less be the intellectual accompaniment of the machine process—of industrial rather than commercial civilization. There is nothing incompatible, so at least Veblen asserts, between a high commercialism and the densest animism—indeed, quite the contrary. A well-matured machine technique, however, presupposes and directly cultivates the scientific temper. The reconstruction of philosophy in modern times must be regarded as a refunding operation through which philosophy is being merged with modern science. This process began with the starry heavens above; Professor Dewey's latest book suggests the speculation that its consummation may be the moral law within.

Naturally the development of empiricism from Bacon and Hobbes to the present revolt against Hegelian absolutism has not been without incident: that wave of absolutism in the nineteenth century is its chief incident. The unsurpassed scientific objectivity of Hume and Kant was swamped in the decades that brought the Holy Alliance and the Wesleyan revival by a general resumption of the

medieval habit of mind. And through the exigencies of university organization this habit has persisted well into the twentieth century so that a world which has become thoroughly trained in the scientific bent can contemplate the persistence at the centers of its intellectual life of a tradition which, conceiving the human soul in the spirit of the medieval church, proceeds to impute its characteristics to the universe at large, to the utter neglect if not the denial of the contrary scientific preconceptions of all the rest of the world.

The presence and continued (though weakening) vigor of this tradition accounts for the posture of contemporary empiricism, as distinguished from that of the period which the course books call "modern." The modern philosophy of Bacon, or even of Descartes, represented the first onslaught of physics and mathematics upon the glorified animism of medieval theology—of the solar system upon the solar system. Contemporary instrumentalism, speaking in a world now overwhelmingly scientific, is directed against the last stand of animism (for McDougall is right in identifying mentalism as animism) in the field of human behavior. The most bitterly contested issues in contemporary philosophy (arising between idealism and pragmatism) are psychological issues. The first great breach in the tradition of absolutism was made by a psychologist trained in medicine and physiology; Professor Dewey's most distinctive achievement also is behaviorism. The *Essays in Experimental Logic*, so metaphysical in tone, have as their principal burden the maintenance of the psychological (behaviorist) assumption that thinking is a part of human behavior and must be treated as such against a school which rejoices first to abstract thinking from the rest of the universe and then to bring the universe over into thought. Similarly the educational principles of *Democracy and Education*, etc., derive from the behaviorist assumption on the nature of education: the behavior of children, intellectual and otherwise, can be guided successfully only in such an environment as provokes the desired responses and allows them to integrate into habits.

Perhaps it is owing to his absorption in educational theory that Professor Dewey's own interest in the study of behavior and the attack upon animism has become increasingly social and has now resulted in a volume of lectures on social psychology. Perhaps it is also due to his large preoccupation with public affairs during the war and the peace—since the time of Randolph Bourne's devoted though "savage indignation" that he was not then "out in the arena of the concrete, himself interpreting current life."¹ Probably a deeper reason lies in the character of social psychology.

¹ *New Republic*, March 13, 1915.

The vital issues of behaviorism are at this moment to be found in social psychology. The inevitable extension of the experimental technique from biology to psychology at first involved no abatement of mentalism. Certain mental states seemed to be susceptible to the technique, which was accordingly applied—particularly of course to sensations, since the sense organs are the most accessible. In the course of time the physiological character of both investigations and data has come to be recognized and a rapprochement established between neurology and psychology, until now so large a proportion of the actual labors of all the psychologists is experimental that the distinction between behaviorists and others seems largely a matter of terminology. Simultaneously, however, has come a quite general sense that mentalism, unwittingly pushed out of individual psychology by the experimental technique, can make a stand on instinct in social behavior. Particular reactions may be experimentally reducible to neurological (or glandular) terms; general tendencies may still be couched in terms as mystical as one could wish. The spirit world, excluded from the reflex arc, the tropism, and the hormone, may still make its entrance through the magic potencies of instinct, precisely as it once did through Descartes's pineal gland. The Cartesian dualism of mystical and scientific principles in human behavior is today the dualism of instinct and habit. To be sure, general interest in the problem has shifted from theology to sociology; but the issues remain unchanged.²

Upon this problem Professor Dewey now takes his stand as uncompromisingly as in his most polemical metaphysics. *Human Nature and Conduct* presents Dewey's theory of the organization of human behavior, in individuals and communities, by habit and custom. Its fundamental postulate is the abandonment of the old individual psychology of separate and independent minds by which mind has been conceived as a mysterious intruder, or a mysterious parallel accomplishment of the natural world (pp. 84, 5). The corresponding antithetical assumption that is postulated in its place is the one which has been much more familiar hitherto in anthropology than in psychology. There the formula is: *Omnis cultura ex cultura*. "The problem of social psychology," writes Dewey, "is not how either individual or collective mind forms social groups and customs, but how different customs, establishing interacting arrangements, form and nurture different minds" (p. 63). "We

² Professor Dewey emphasizes this shift of interest, attributing it to the general "decline in the authority of social oligarchy" (p. 3), and interest in "doing away with old institutions" (p. 93). Of course magic potencies may be displayed on both sides of such controversies. Carleton Parker drew on McDougall's instincts in his defense of the I. W. W., though McDougall reserves them for God, for country, and for home.

often fancy that institutions, social customs, collective habit, have been formed by the consolidation of individual habits. In the main this supposition is false to fact. . . . Customs persist because individuals form their personal habits under conditions set by prior customs" (p. 58). That is, the indispensable condition of the organization of behavior is preëxisting organized behavior.

Such a theory of conduct has conspicuous implications for ethics. Professor Dewey accepts them at once, and accordingly makes moral conduct the chief subject of his analysis throughout the book. For such a theory of behavior as this, "morals mean customs, folk-ways, established collective habits. This is a commonplace of the anthropologist, though the moral theorist generally suffers from an illusion that his own place and day is, or ought to be, an exception. But always and everywhere customs supply the standards for personal activities" (p. 75). By accepting the hardly more than Darwinian hypothesis that the facts of man are continuous with those of the rest of nature we can ally ethics with physics and biology; by accepting the anthropological dogma of the continuity of all human activity we can link ethics with history, sociology, jurisprudence, and economics (p. 12). Even moral philosophy can be assimilated to modern science!

The three lectures, on habit, impulse, and intelligence, which make up the bulk of the book, seek to indicate how this may be done. They are an introduction not so much to the subject of social psychology, or of ethics, as to the problems: not a syllabus outline of a fully developed science but a preliminary statement of the presuppositions upon which a science may be developed. Habit is the framework and custom the content of behavior. Impulse is the propelling, energy-releasing force behind all activity—not in the form of the familiar instincts (there are no separate instincts), but as a tremendous multiplicity of exceedingly circumscribed reactions to specific stimuli.³ They require to be organized by habit into modes of behavior and only thus assume form as the activity of civilized man. And if we do not know, at least we know how with our habits. Knowledge lives in the muscles, trained muscles, not in consciousness. Thought is the interruption, the clash, the readjustment of habits.

³ Professor Dewey gives the reader every reason to suppose that the impulses which he retains as the basis of all behavior after the rejection of "separate instincts" are the reflexes and tropisms and so on, familiar to the neurologist. For some reason, to my mind highly questionable, he refrains from any direct assertion to this effect either in the form of a reference to the literature of neurology or by the use of identifying technical words. Perhaps neither could be done in lectures; but as an "Introduction" the book ought to introduce.

All this becomes concrete when it is applied to the problem of conduct. Morality is custom-organized, habitual behavior; there are no bad habits but custom makes them so. No moral order is based on instinctive, eternally unalterable behavior, nor can moral order result from the abrogation of all organizing conventions. Morality is the ordering of habit by intelligence. Rejecting all ethical principles that would identify morality with some special type of impulse or experience, Professor Dewey describes it essentially as Kant did—as order. “Intelligence is concerned with foreseeing the future so that action may have order and direction” (p. 238). Morality is the outcome of practical reason.

And then—strangely enough, for, from the *Outlines of Ethics* (published at Ann Arbor in 1891) to the present work, Dewey has devoted more space to the criticism of Kant than of any other philosopher, and always for this very peculiarity—he recommends intelligence!

This is no new thing, of course. “Creative intelligence” has been as much a slogan as a description among pragmatists since James. Professor Dewey’s constant insistence in his philosophical writing upon the functional, experimental character of the thinking process seems to express a very deep-lying and in the end hyper-logical belief in its efficacy; while in the magazine articles his enthusiasm for intelligence approximates that of the revivalist.⁴

It is not my object here to give Kant an inning against his most insistent critic, nor even to assert the futility of advising the world to be intelligent, to organize its habits flexibly, and all that. Professor Dewey has made the best possible case against an ethics of mandatory principles in this book.⁵ Simply to note that the categorical imperative appears from chapter to chapter is interesting, however.⁶ In his famous essay on the influence of Darwin on philosophy Professor Dewey summarized as follows: “No one can

⁴ *E.g.*, “The American Intellectual Frontier,” *New Republic*, May 10, 1922.

⁵ *E.g.*, p. 27. “Recently a friend remarked to me that there was one superstition current among even cultivated persons. They suppose that if one is told what to do, if the right *end* is pointed out to them, all that is required in order to bring about the right act is will or wish on the part of the one who is to act.” *Etc., etc.*

⁶ An individual “can, if he will, intelligently adapt customs to traditions” (p. 75). “The most precious part of plasticity consists in ability to form habits of independent judgment and of inventive initiation” (p. 97). “In learning habits it is possible for men to learn the habit of learning. Then betterment becomes a conscious principle of life” (p. 105). “The moral is to develop conscientiousness, ability to judge the significance of what we are doing. . . . Therefore the important thing is the fostering of those habits and impulses which lead to a broad, just, sympathetic survey of situations” (p. 207).

fairly deny that at present there are two effects of the Darwinian mode of thinking. On the one hand there are making many sincere and vital efforts to revise our traditional philosophic conceptions in accordance with its demands. On the other hand, there is as definitely a recrudescence of absolutist philosophies." Is it certain that the two will be wholly separate? Perhaps the gospel of science contains its own absolutism, its own rationalism, its own infinite,⁷ its "appeal through experience to something that essentially goes beyond experience"—beyond, that is to say, the coolly skeptical experimental observations of the scientist.

Without doubt this is a lapse in logic. Yet for the discriminating reader it may serve to make the book a human document without materially affecting the clarity of the issues. Life is a continuous lapse of logic, and this book seems to me rather more alive, more directly and humanly expressive, than any other that Professor Dewey has yet written. This is yet another reason why, though it is an introduction, it is not a syllabus. One feels in reading that the whole range of interest of a most flexible mind is being played upon the text. The harmonies are rich and varied, and sonata-form gets lost in their depths. Indeed, the organization of the book is very loose—much less rigid even than the analytical table augurs. In general it follows the three-fold division indicated above; but apart from that the ideas flow down their natural and broken course rather than through the concreted channel of a pre-determined order.

The course provides many interesting moments. "All habits are demands for certain kinds of activity; and they constitute the self. In any intelligible sense of the word will, they *are* will" (p. 25). "For will means, in the concrete, habits; and habits incorporate an environment within themselves. They are adjustments of the environment, not merely *to* it" (p. 52). "Were it not for the continued operation of all habits in every act, no such thing as character could exist. There would be simply a bundle, an untied bundle at that, of isolated acts. Character is the interpenetration of habits" (p. 38). "Why have men become so attached to fixed, eternal ends? Why is it not universally recognized that an end is a device of intelligence in guiding action, instrumental to freeing and harmonizing troubled and divided tendencies? . . . Ends are, in fact, literally endless, forever coming into existence as new activities occasion new consequences" (pp. 231-2). "As we account

⁷ "Religion, as a sense of the whole, is the most individualized of all things Instead of marking the freedom and peace of the individual as a member of an infinite whole, it has been . . ." (p. 331).

for war by pugnacity, for the capitalistic system by the necessity of an incentive of gain to stir ambition and effort, so we account for Greece by power of esthetic observation, Rome by administrative ability, the middle ages by interest in religion, and so on. We have constructed an elaborate political zoölogy as mythical and not nearly as poetic as the other zoölogy of phoenixes, griffins and unicorns" (p. 111). "Current democracy acclaims success more boisterously than do other social forms, and surrounds failure with a more reverberating train of echoes. But the prestige thus given excellence is largely adventitious. The achievement of thought attracts others not so much intrinsically as because of an eminence due to multitudinous advertising and a swarm of imitators" (p. 66). "It is only by accident that the separate and endowed 'thought' of professional thinkers leaks out into action and affects custom" (pp. 68-9). ". . . think of the insolent coercions, the insinuating briberies, the pedagogic solemnities by which the freshness of youth can be faded and its vivid curiosities dulled. Education becomes the art of taking advantage of the helplessness of the young; the forming of habits becomes a guarantee for the maintenance of hedges of custom" (p. 64).

In short this is the most eminently readable and quotable book Professor Dewey has written.⁸ But it is not a "text"; it will not suit the orderly and sterile mind of the efficient teacher. And it will be a hard book for professional attackers and defenders of the pragmatic faith, for the word "pragmatism" occurs only in the index, the word "instrumentalism" not at all.

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JOURNALS AND NEW BOOKS

REVISTA DE PSIQUIATRIA Y DISCIPLINAS CONEXAS (Lima). IV, 2. April, 1922. Los Mitos Médicos peruanos: *Hermilio Valdizán y Angel Maldonado*. Confusión mental en la encefalitis epidémica: *Max. Gonzales Olaechea*. El Mongolismo: *E. S. Guzmán Barrón*. Reacción subepidérmica a la adrenalina como método de exploración del sistema nervioso simpático: *Delfín C. Espino*. La negación de la paternidad como síntoma psicósico (conclusion): *Honorio F. Delgado*. Tratameinto de la epilepsia por el luminal: *Honorio F. Delgado*.

⁸ This in spite of the lack of tonality of its author's style—frequently noted by reviewers—which allows him to use the jarring form "morals is," and to pass over slips in construction like that on p. 22, line 16, or the "one-them" of a sentence quoted above.

REVUE PHILOSOPHIQUE. XLVII, 5-6. May-June, 1922. Le renouvellement des conceptions atomistiques: *L. Brunschvicg*. William James d'après sa correspondance: *J. Wahl*. L'ennui morbide: *L. Dupuis*. La psychanalyse et le problème de l'inconscient, II: *A. Ombredane*.

University of Iowa Studies in Psychology: No. VIII. Edited by Carl E. Seashore. Psychological Monographs: Vol. No. 31, No. 1. Princeton. Psychological Review Co. 1922. 382 pp.

Nys, D.: La Notion d'espace. Bruxelles: Les Editions Robert Sand. 1922. Pp. 448. 30 fr.

Sainsbury, Geoffrey: Polarity. London: Favil Press. 1922. 48 pp. 3s 6d.

NOTES AND NEWS

A joint session of the Mind Association, the Aristotelian Society and the British Psychological Society was held in Manchester from July 14 to 18. Most of the papers read at that time will be published in the October issue of *Mind*.

Professor June E. Downey, head of the department of psychology at the University of Wyoming, has been granted leave of absence for travel and study during the academic year 1922-23. Miss Louisa C. Wagoner will be acting head of the department during Professor Downey's absence, and will be assisted by Mr. Donald A. Laird of the University of Iowa.

THE JOURNAL OF PHILOSOPHY

VALUE AND WORTH¹

THE purpose of this article is to seek common ground on which two opposed schools of value-philosophy may meet. One school, represented recently by Perry, Prall, and Pepper, finds the definition of intrinsic value in the affective-volitional relation of interest. These writers conceive value to have a psychological basis in feeling and to designate relations between an individual and objects or acts liked or disliked. The other school, defended ably in America by Urban, finds value asserted in a unique type of judgment, and defines it as a category of being. I shall not discuss a third view, presented by Moore and Russell, that value is a quality, for I agree with Urban's position that this view is encumbered with insuperable difficulties. Incidentally, in the course of the article, I shall reply to Mr. Urban's generous review of my book.²

I

The exponents of a relational value-theory maintain that value defined as a relation of interest is a sufficient description of value wherever it occurs. My first task will be to consider Mr. Urban's objections to the relational theory. I shall not, however, be concerned to defend Sheldon's "ontological definition" of value³ as "the fulfilment of any tendency whatsoever." Here I accept Mr. Urban's criticism. I shall hope to show, however, what is the true bearing of the latter's criticism of the definition that is psychological and relational.

Mr. Urban believes that a relational definition of value is circu-

¹ The articles most frequently cited in this paper are those by Urban, this JOURNAL, Vol. XIII, pp. 449-465, 673-687; Vol. XIV, pp. 309-327; Vol. XV, pp. 393-405. I also cite, from the same JOURNAL, those by Perry, Vol. XI, pp. 141-162, and Fisher, Vol. XIV, pp. 570-582. Also, the monograph by Prall, *A Study in the Theory of Value*, Univ. of Cal. Publications in Philosophy, Vol. 3, No. 2, 1921, and my book, *Values, Immediate and Contributory, and Their Interrelation*, New York Univ. Press, 1920.

² This JOURNAL, Vol. XIX, pp. 53-55.

³ *Ibid.*, Vol. XIII, pp. 453-455.

lar in character. What he means, I think, is that this attempt at definition leaves out an essential (to Mr. Urban *the* essential) mark of value. For he says⁴ that "the denial that value can ultimately be defined as a relation does not mean that relational definitions are not useful." It is of great importance, therefore, to discover just what is omitted in a relational definition. Mr. Urban's criticisms⁵ will point the way.

1. "Why, it may well be asked, should fulfilment of interest be a good? Why should pleasure confer a value? In all such definitions valuableness is already assumed—as an intrinsic quality of pleasure or of fulfilment, as the case may be." The sequel will show that I recognize that all included under the word value can not be defined as affective-volitional relations of interest. But it is true that one class of values, sometimes spoken of as *immediate*, can be defined adequately in such terms. I may like or dislike given objects or acts apart from any reflection. A bright color or a warm breeze may arouse in me a thrill of pleasure. To defend the application of the term value to such experiences, it is necessary only to indicate that it has a clear meaning when so used. Now when I speak of my likings and dislikings as having to do with value, I use the term to designate relations between a feeling individual and certain objects or acts. Value is not assumed to be "an intrinsic quality of pleasure," for the relations are between a pleased or displeased individual and liked or disliked objects or acts. "Interest" may be used in almost the same meaning, although "interest" frequently emphasizes the first term and "value" the second term of the same relation.

2. So far we have avoided the circularity which Mr. Urban thinks to beset a relational definition of all value. He tells us, however, that the circularity appears in another way. "The value of an object consists, it is said, in its satisfaction of desire, or more broadly, fulfilment of interest. But it is always possible to raise further questions which show conclusively that the value concept is already presupposed. Is the interest itself worthy of being satisfied? Is the object worthy of being of interest? In other words, the fact of intrinsic value requires us to find the essence of value in something other than this type of relation."

To defend the adequacy of a relational definition of immediate values, I may point out that such a definition is adequate because the questions raised by Mr. Urban are not a part of the experience. They need not be answered because they are not asked. My liking for a hot bath may have no reflective basis. Reflection might con-

⁴ *Ibid.*, Vol. XIII, p. 455, footnote.

⁵ *Ibid.*, Vol. XIII, p. 453.

vince me that the worth of a hot bath, at the time it was taken, was entirely negative. Surely we are not compelled to analyze our feelings in order to have them, and I can see no objection to calling the relations that come into being when things are liked or disliked, relations of immediate value.

It is quite another thing, however, to maintain that all that passes under the name of value may be defined in terms of affective-volitional relations. The usual criticism of the position that judgment plays an essential part in determining some values is to the effect that, although relations of interest may be modified by judgment, such judgment does not alter the essential nature of value which is still to be described in terms of interest. It is said that although I may begin by liking jazz and end by liking Brahms, value first and last is my interest in the one or the other. As Mr. Prall says,⁶ "Judgment, while it may be instrumental in our coming to the point of assuming the attitude of liking toward one thing rather than another, never itself constitutes that attitude. The liking is all we have. We may be able to inquire why we like; but when we do thus inquire, we only analyze our liking into its respective parts or else show that one judgment of value implies the existence of another value than the one judged."

The nature of these contrasting points of view is best brought out when we ask how each is related to conscious activity. On the one hand, those who define all value in affective-volitional terms assert that the valuing individual is related to the objects or acts valued through feeling. On the other hand, other writers maintain that this type of definition leaves out the essential element of value, and they find this essential element in judgment. Nevertheless, those who hold this second view consider that feeling plays a part in the value-experience, so that it may be said that they describe the individual as both knowing and feeling in the experience of value. The first view is that of Perry and Prall; the second is held by writers of such different viewpoints as Dewey, Urban, Rickert, and Windelband. The latter writers have no psychological scruple in thus blending two aspects of consciousness, for they believe that the value-experience partakes of the character of both. I can not agree with this viewpoint for reasons which I shall cite below. My suggested solution of the problem will lie in the direction of maintaining that there are two broad types of values, one of which may be defined adequately as affective-volitional relations of interest, the other as worth which lies wholly within the realm of cognition.

⁶ Prall, *op. cit.*, p. 267.

II

Mr. Urban feels that the affective-volitional definition leaves out the element of the *worth* of the feeling. Three possible viewpoints may be taken as to the position that worth occupies in conscious experience. (1) Worth may still lie within feeling when it is not determined wholly by feeling-relations. In other words, there may be some aspect of being, independent of the individual, which is of the nature of feeling, or at least near enough like feeling to be felt. To describe the relation of the valuing individual to such an "over-individual" worth-determinant, we should have to invent a term in the language of feeling to correspond with "apprehension" in the language of cognition. (2) Worth may be apprehended in the value-judgment which is the cognitive aspect of a whole experience of value in which cognition and feeling are blended. (3) Worth may be cognized only, and this worth-experience may be quite distinct from the feeling-relation of value between the individual who has the worth-experience and the object esteemed. The desirability of making a distinction between value and worth was first suggested to me in a letter from Miss Mary Case. Mr. Pepper's paper, "Primitive and Standard Value," recently read before the American Philosophical Association (1922), also led me to think of the implications of such a distinction.

I shall first consider the position that worth is in some way experienced through feeling. To describe this view adequately requires delicate handling. It is substantially that of Mr. Fisher, although I am not always clear as to his full meaning. Both he and Mr. Urban believe that value (Urban) or an object's value (Fisher) is apprehended in the value-judgment. But Mr. Fisher denies⁷ that value itself is apprehended by the cognitive aspect of consciousness, although he holds that the complex "value-of-an-object" may thus be apprehended. I think that he means that a cognitive element enters our experience of value when we attribute worth to a particular object. This judgment of worth of an object is to be distinguished from worth itself which is "apprehended" through feeling. I can not help feeling that much remains unsaid by Mr. Fisher regarding the relation of the worth apprehended by feeling to the worth attributed to objects in the value-judgment. But I am not concerned here with enlarging on this question; the more fundamental question is whether worth may lie wholly within the sphere of feeling.

Mr. Fisher believes that we are unable to have knowledge of worth because worth is apprehended through some form of feeling.

⁷ This JOURNAL, Vol. XIV, p. 578.

He accepts, therefore, one horn of Perry's dilemma⁸ ("The attitude of interest either constitutes values or it cognizes them"), and very logically denies that worth can be cognized at all. Knowledge *about* worth we may have, as we have knowledge about feeling, but we can no more cognize worth itself than we can inspect feeling through a microscope. I can not but feel that Urban impales Fisher on the wrong horn of the dilemma. Because he fails to see the importance of Fisher's distinction between value and an object's value, and because Fisher uses the term "apprehension" of worth and speaks as if feeling "merely furnishes the requisite sensibility" for such apprehension, Urban takes it for granted that he believes that worth may be cognized. This misapprehension arises partly through lack of a proper nomenclature, and partly through the lack of sufficient explanation by Fisher as to how objects *get* a value that lies within the realm of feeling. On the other hand, if he holds that worth is apprehended by feeling, he can suitably deny that worth itself can be cognized.

What is the bearing of a theory that worth is apprehended by feeling? The answer to this question would be contained in a discipline concerned with feeling much as epistemology is concerned with cognition. Is there objective worth which is affirmed (for want of a better term) by feeling, and which is an attribute (not a quality) of the objects of certain feeling-relations, but which lies outside that portion of given experience which is open to cognition? Empirical evidence for such a theory might be sought among primitive esthetic satisfactions produced by colors, harmonies, *etc.*, if some of these might be found to be without adequate psycho-physical explanation. In other words, it might be proved that we face a kind of brute reality in the worth-experience which can be explained only on the assumption that there is a category of feeling within the realm of being that is just as unalterable as the reality underlying the objects of cognition.

If such a theory were proved a fact, beauty would be shown to be independent of its apprehension; it would transcend relations of interest; and I doubt the wisdom of applying the term "value" to it at all. The evidence bearing on the theory is of such great complexity that after several years of reflection I am yet unable to form an opinion. I should welcome light from Mr. Fisher. If, however, it should be proved that worth of a certain kind is apprehended through feeling, such worth would be entirely distinct from the cognitive worth that I am about to discuss.

Having considered Mr. Fisher's position, I now turn to the

⁸ *Ibid.*, Vol. XI, p. 152.

second and third possible standpoints regarding attribution of worth. Worth, as Mr. Urban thinks, may be attributed to an object in a value-judgment, the whole experience being of both a cognitive and an affective character. Mr. Urban's treatment of the value-judgment leaves no room for doubt that this is the meaning intended. He claims that we *know* value by affirmation in judgment,⁹ and also that in making a value-judgment we are governed by an *a priori* law which works in us as "*an essential form of interest and volition as such.*"¹⁰ I am not at the moment concerned with his theory that value is a category of reality apart from our experience, but solely with the one point that whenever we experience value, we are said to do so through both cognition and feeling. An experience of worth, under this view, must be referred to conscious activity as a whole if it is to be given a psychological description.

Against this view, I hold that value and worth, when analyzed, prove to be distinct, and that the term "intrinsic worth" has been applied ambiguously to designate now the one, now the other. First, I shall give instances of this confusion; secondly, I shall proceed to develop the view that the two types of intrinsic worth have distinct psychological bases, a task that will involve a criticism of Mr. Urban's theory of value-judgments.

1. I find a common assumption underlying the radically different views of Perry, Urban, Prall, and Dewey. It is that the intrinsic values defined as affective-volitional relations of interest are the same sort of entities as the intrinsic values which appear when we ask questions as to whether the worths are justified. Perry analyzes the complex state of mind when one judges a value into judgments of fact plus feeling for the object judged.¹¹ This feeling, for him, constitutes the value. Perry's position, therefore, is that intrinsic value, whether it be reflective or immediate, is equally constituted by feeling for an object, *i.e.*, that intrinsic value is always affective-volitional.

Prall¹² has shown recently in a forceful way that a judgment of contributory value such as "The pen is good for writing" implies the intrinsic worths of the "higher values" of truth, goodness, and contemplation. But Mr. Prall's thesis is that of "the identical nature of value as it appears in all cases of valuing."¹³ Prall and Perry agree that value is constituted by interest, and that judgments of value do not affect the basic nature of value itself or bring

⁹ This JOURNAL, Vol. XIII, p. 463.

¹⁰ *Ibid.*, Vol. XIII, p. 677.

¹¹ *Ibid.*, Vol. XI, pp. 161-162.

¹² Prall, *op. cit.*, p. 266.

¹³ *Ibid.*, p. 254.

to light any new class of values. Urban, as we have seen, assumes the identity of the value defined as relational with the worth that appears after questions are asked as to its justification. Furthermore, in his later theory of value, he attempts to identify in kind all cases of intrinsic value by claiming that value is apprehended in a special kind of judgment, while maintaining at the same time that value is "*an essential form of interest and volition as such.*"¹⁴ Finally, Dewey,¹⁵ while recognizing the distinctness of many classes of values, speaks of certain judgments plus subsequent acts bringing into existence new intrinsic values. He thus regards affective-volitional values as of the same nature as the new intrinsic values which appear in consequence of judgment, in so far as *interest* is concerned. The new values differ, of course, in their cognitional aspect. Dewey and Urban, therefore, blend feeling and cognition in their descriptions of the values of appreciation in different ways. They make feeling an essential element of the worths affirmed in value-judgments, and neither of them would agree that the intrinsic worth affirmed in judgment does not contain the same element of feeling that creates simple, immediate values.

I submit that each of these writers fails adequately to analyze intrinsic value. I believe that much diversity of opinion will disappear when it is recognized that this term has been applied indiscriminately to value and worth. Although Miss Case first suggested the desirability of the distinction, I can not say, of course, that either she or Mr. Pepper, who recalled it to mind, would accept my development of it.

2. Let me begin with a word of caution. I do not assert that feeling and cognition may be separated in existence. Elsewhere¹⁶ I have amplified this statement. While describing conscious activity as related to environment in two ways, I have not departed from the accepted psychological fact that feeling and cognition never occur in isolation. I do claim, however, that the affective and cognitive elements are always distinct upon introspective analysis, and that we can say of no conscious state that it contains a blend of feeling and cognition that defies analysis into two distinct aspects.¹⁷ The purpose of this article is to prove that intrinsic value never properly designates the relation of objects to both aspects of conscious activity at once, but that there are two distinct types of in-

¹⁴ This JOURNAL, Vol. XIII, p. 677.

¹⁵ In a paper now in press.

¹⁶ "The Coördinate Character of Feeling and Cognition," this JOURNAL, Vol. XVIII, pp. 288-295.

¹⁷ *Values, Immediate and Contributory, and Their Interrelation*, pp. 94-104.

trinsic worth, concerned with the relation of objects to feeling and cognition, respectively.

(1) *Interest and Worth*.—Consideration of an objection to the distinction between immediate value and cognitive worth may serve as our starting-point. Perry and Prall claim that however modified our ascription of worth may become in consequence of judgment, the constitutive factor of both immediate value and cognitive worth always remains the element of *interest*. My enjoyment of a Bach fugue, however increased by study of its counterpoint, must in the end be referred to my liking for it, and this enjoyment is of the same nature as that which I experience when I taste a savory morsel. I reply that this statement, if adduced as an argument for the identity of the factor that constitutes immediate value with that which constitutes intrinsic worth, is a *non sequitur*. Since feeling is never divorced from cognition in conscious experience, it goes without saying that there are affective value-relations present in every moment of conscious activity. This fact, however, does not take into account the *additional* element of worth that may appear upon the reflection. Perry and Prall uncritically identify affective interest with interest that is wholly cognitive. To separate the two kinds of interest, it is only necessary to reflect that immediate value may be positive while at the same time cognitive worth is negative, and *vice versa*. I may continue to like a certain picture that my newly acquired esthetic taste condemns. I may heartily dislike music that I know and recognize to be "good." The confusion of these writers is due to an uncritical identification of *two distinct types of interest*.

In the moral and esthetic spheres, recognition of worth and liking for the object or act esteemed have too often been identified by philosophers. In the case of ethics, the moral conflict that often occurs between what I like and what I recognize to be best would seem to be sufficient empirical evidence to destroy this notion. Knowledge and virtue and pleasure would go hand in hand if an ideal of harmonious functioning were stipulated and attained, but practically I may reflect with little pleasure upon an act to which I ascribe great moral worth. Again, Dewey's discussion of "valuations" that are not final until I have performed an act in consequence of a preliminary judgment goes to prove that not only reflection, but also practical activities may contribute to the modification of worths previously ascribed, but it does not imply that my liking has changed gradually in the process in the positive direction. That may or may not be the case. To claim that the recognition of moral worth is the same as the felt value of moral worth is to dis-

regard the experience of moral conflict. And if it is true that certain ethical systems base their standards of moral worth on felt pleasure, it is also true that other systems are equally well able to entertain the notion of moral worth that becomes pleasurable only after the natural affections have been suppressed in its favor.

In his definition of the esthetic experience, Mr. Prall gives an unconscious illustration of this distinction. He says,¹⁸ "We may value for itself the good act which expresses the good will; but the more completely we value it in itself, the more completely do we simply dwell upon it in contemplation, give ourselves over to it as total object, lose ourselves in it. And what we are *interested* in in this complete way, in pure contemplation, in *disinterested attentiveness*, is what we call the esthetically valuable" (italics mine). It may be said fairly that an interest which may be described as "disinterested attentiveness" is quite other than the interest of which we speak when we discuss affective relations.

(2) *Value-Judgments and Worth*.—The distinction between immediate value and worth rests on empirical grounds. But we have still to show that the experience of worth does not *in itself* contain an element of feeling. Undoubtedly, there are affective elements present at the time one has the worth-experience. The question is whether the worth-experience itself is partly constituted by feeling, or whether it is wholly cognitive (in the same sense as we say that to know is not to feel, although we must do both at each conscious moment). Any writer who confuses affective with cognitive interest is likely to define the experience of worth partly in terms of feeling, partly in those of cognition, if, indeed, he does not restrict both value and worth to the affective factor. Dewey and Urban both describe classes of worths that are neither wholly cognitive nor wholly affective. I shall content myself here with a criticism of Mr. Urban's position, that being the more extreme.

Value-judgments may or may not imply the recognition of standards of worth. One class of value-judgments contains no implication of worth. "I like smoking" may serve merely to bring to conscious attention a fact of affective value. No question need be raised as to the worth of smoking, because none is raised. But once that I do raise such a question, it becomes of importance to investigate the nature of the worth that is affirmed. If Mr. Urban would accept this standpoint, he might contribute much toward our knowledge of worth-affirmation. He would argue, I believe, that the objective nature of worth lies in the form rather than in the matter of affirmation. Value-judgments do not guarantee any particular

¹⁸ Prall, p. 266.

worths, such as happiness or goodness, but they all have a common form, and this form is of the nature of a category of judgment. But let us see how Mr. Urban leads up to his theory of value-judgment.

After rejecting definitions of value in relational or qualitative terms, Mr. Urban investigated the possibilities latent in the substantival form of expression of values. Often we say, "This is a worth." One who still clings to the relational form of definition can readily explain this usage by calling attention to the fact that we frequently use single words to designate relations. "James shows backwardness in his studies" means that James has other boys ahead of him. But Mr. Urban believes that it is not only possible to use value in substantival fashion, but that the notion of value can be rendered adequately only in the proposition "that *A* ought to be on its own account," and he concludes that value is an objective, so far as it is amenable to expression in language.¹⁹ More explicitly, the value-judgment involves, in addition to the judgment itself, "*an essential form of interest and volition as such.*"²⁰

Limitation of space prohibits me from entering in detail into the *minutiæ* of the controversy between Urban and Fisher over the possibility of conceiving value as an objective in Meinong's sense. Fortunately for my purpose, such discussion will not be required. It will be sufficient to show that the alleged typical value-judgment imports a special connotation into the term "intrinsic worth," and then to show that any expression of worth in judgment conforms to a type that I shall make clear.

Mr. Urban, as against Fisher, holds that *oughtness* in the value-judgment is quite distinct from obligation, and that the latter is a special case of the former. In his reply to Fisher,²¹ he refers to his previous argument.²² As I think, he made two points. (1) "Nor have I space to rehearse how, after showing that intrinsic value is ultimately indefinable in terms either of quality or relation, it can be finally stated only as equivalent to 'ought to be.' My critic does not even refer to these arguments, much less meet them." (2) "Of many things we can say that they ought to be, when it would be wholly absurd to think that this notion involved a command to any person or group of persons." Now since I have admitted that worth involves something more than affective-relational value, and since I believe that an adequate definition of worth can be attained in some other way than through the "typical value-judgment," the first point may await the sequel. But I would join with Fisher in denying that

¹⁹ This JOURNAL, Vol. XIII, p. 462.

²⁰ *Ibid.*, Vol. XIII, p. 677.

²¹ *Ibid.*, Vol. XV, p. 398.

²² *Ibid.*, Vol. XIII, p. 462.

ought is ever used (except by Mr. Urban) without the notion of obligation. Mr. Urban says,²³ "Is it not sufficient to recall again that we often say that things ought to have been otherwise when we have not the slightest intention of ascribing obligation to them?" This, however, was hardly Fisher's point. The latter argued that *ought* involves always the notion of obligation of a person or group of persons, not of the things concerned. One wishes that Mr. Urban had given concrete examples. He shows²⁴ correctly that Perry's criticism does not touch the point because his illustrations are ill-chosen. Perhaps the following examples will suffice: "The *Lusitania* ought not to have been sunk." Here it is stated that an event should not have taken place. Is there not, however, in the mind of the speaker the notion of moral obligation unfulfilled by those who were responsible for sinking the ship? "John ought to have been happy, for he was a good man, but circumstances were against him." Does not this imply that some beneficent Power should have arranged circumstances otherwise? I can not protest too strongly against the practise of making the judgment of *moral* worth typical of *all* intrinsic worth.

In his review²⁵ of my book, Mr. Urban says that I deny that there are judgments of intrinsic value. I presume that "of" is here the sign of an objective genitive, and that he means that I deny that judgment is the means whereby intrinsic values are apprehended. From what I have said, it will be obvious that I am now engaged in proving that worth, as distinguished from immediate value, is brought into being by reflection, and that intrinsic worth therefore is affirmed in judgment. My book did not treat of worth-judgments from this point of view. To be clear, let me mention briefly some of the values that are associated with a judgment of intrinsic worth.

"Goodness is valuable in itself." First, there is the contributory value of the *act* of judgment, this particular judgment, like all judgments, being a means to the end of self-expression. Secondly, there is the value of the *content* of the judgment for the one who judges, which varies according to the range of application to practical activities—here the range is wide. This is also contributory in character. Thirdly, there is the value that springs from my liking or disliking the object judged (goodness). This is value of the immediate type. With these values I was chiefly concerned in the constructive portion of my book. Finally, there is the affirmation of the worth of goodness, which I should rate as a type distinct from either immediate or con-

²³ This JOURNAL, Vol. XV, p. 398.

²⁴ *Ibid.*, Vol. XV, p. 401.

²⁵ *Ibid.*, Vol. XIX, pp. 53-55.

tributory value, but which is more nearly allied formally to contributory value than to immediate.

Mr. Urban believes that I use the term "contributory value" equivocally, now as signifying a means to an end, now in the meaning of "adding to the functioning of conscious activity." I have guarded, however, against such an equivocation. The sense in which all judgments are contributory because they add to the functioning of conscious activity is, as Mr. Urban fails to note, from the standpoint of an observer. Now while the judging individual is not himself making a judgment about intrinsic worth as additive to conscious activity, an observer who looks upon the activity of the individual must regard all judgments, nay, every instance of conscious functioning, as a means to the end of modifying in some way the contact of the individual with his environment.

Here I wish to go further than I did in my book and maintain that judgments of worth fall into a form common to them and to all contributory values. And I shall take care to exhibit this fact in its naturalness, rather than to "force" these judgments, "in pragmatic fashion, into the instrumental mold."

To begin with, worth is not fully expressed in such a judgment as "*A* has worth." We ask what kind of worth it has. Is it a means to an end? Then it will be of contributory value. Or is it worthy in itself? Then it has intrinsic worth. Observe that Mr. Urban's typical value-judgment contains the words "on its own account." Some such expression is needed to clear the meaning, to distinguish worth that is contributory from worth that is intrinsic. Now I find a common structure and a common element in judgments of both contributory and intrinsic worth. The common element is a point of reference of the worth to some object or act. In the case of contributory value, *A* is worthy as a means to an end. In the case of intrinsic worth, however, the worth of *A* is *referred back to itself*, and description of the worth is incomplete until this backward reference is made. On the basis of these considerations, it would be allowable to treat all worth as *referential*, and to discuss two types of worth, of which the *differentia* is the point of reference.

Nor only do all worth-judgments exhibit a common referential characteristic; they also exhibit a common structure. I find this structure most conveniently described as that of a triadic relation. In this way it may be distinguished from the structure of immediate value which is dyadic—the terms here being *individual* and *object* or *act*. A worth-relation has three terms: *individual*, the *object* or *act judged*, and the *object* or *act* to which the judged object is referred.

From these considerations, based upon empirical evidence and an analysis of judgments of worth, I hope to have established (1) the distinct natures of immediate value and intrinsic worth, (2) the psychological basis in cognition of all kinds of worth, (3) the adequacy of relational definitions of both value and worth, one as dyadic, the other as triadic, (4) the common form of judgments of contributory value and judgments of intrinsic worth.

I have not space to discuss in detail Mr. Urban's interesting metaphysical speculations. I would, however, instance a most unwarranted assumption that he makes. He says,²⁶ "*That a specific object has positive or negative value, as the case may be, and why it has value, are matters of interest, feeling, and desire; but that it must fall somewhere in the scale of value, this is an essential form of interest and volition as such*, logically prior to any experience of desire or feeling. Over against the world of mere objects as such are the categories of being and value, all-inclusive forms of the world." Why "of the world"? Surely, only on an assumption of the truth of idealism. As an epistemological dualist I am constrained to remark that the category of value may only be inferred to be a category or form of the judgment-process; whether or not it extends beyond the given to the world will depend upon what kind of a world we have.

I believe that I have replied to most of Mr. Urban's criticisms. It is strange, however, to read that I "describe myself as a Pragmatist with certain reservations." The agreement with pragmatism expressed in my book was restricted to one point of method. I mention this more personal matter because it affords an instance of the danger of affixing labels to philosophical standpoints which recognize that truth is not the prerogative of any single sect of philosophical opinion.

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MIND IN THE MECHANICAL ORDER

IF I have properly understood the intent of the article on "Pragmatism and the New Materialism,"¹ Professor Lovejoy's criticism is directed not altogether against pragmatism and behaviorism as such, but rather in part at least against certain philosophies which, having on some points misunderstood the meaning of these movements, have yet taken on their insignia and ended by deforming the spirit of their thought. While it is not always easy

²⁶ This JOURNAL, Vol. XIII, p. 677.

¹ This JOURNAL, Vol. XIX, no. 1.

to distinguish between the behaviorists and those who only call themselves such, I have unavoidably the impression that a part at least of the polemic is directed against some of the neo-realists, who have "joined forces" with behaviorism, rather than against the original representatives of the school itself.²

When Mr. Lovejoy proposes to the pragmatist, or to any one else, his five conundrums about the place of mind in the mechanical or "physical" order, one has a right to know what he means by his terms. "Physical" means, he says, "occupying a position in objective space and existing as a part of the sum of masses and forces dealt with by physical science." This he quotes. Does he agree to the meaning or does he even think that the statement is clear? Does any one suppose that the physical order is independent of mind? Or does not its nature change as the mind succeeds more and more in imposing it upon the world? For the mechanical order may not be absolute; it may be slowly evolved by means of the twin factors of experience and reflection. Let it not be forgotten that mass and space and time change their meaning as experience is enriched and reinterpreted; that the mechanical order of nature is not the absolute and static system it was taken to be, when it achieved its first successes. Does any one suppose that throughout the age-long effort to describe nature in mechanical terms those terms will retain their original and primitive meaning? Will mass forever and infallibly suggest the name of Galileo or Democritus, or space the name of Euclid, or time the name of Kant or Newton? To a student of the history of scientific conceptions nothing could appear more improbable, nothing could appear more *unnatural* than this.

The difficulty of a number of gentlemen who call themselves "realists" consists, or so it seems to me, in the assumption of an absolute mechanical order, which, if not grasped, is at any rate grasped *approximately*. Approximately to what? Why, to that absolute which he assumes, but about which he remains inarticulate. Let him define what he means by the *real* order of nature and I shall understand what is meant by a knowledge which approximates to it. But define it in his "sense" he can not.

Choose as an illustration, if you will, the simplest experiment to be found in the laboratory list. Suppose that your problem is to find the distance between two scratches on a piece of glass. *He* will say perhaps that there is an observed or approximate length

² The thesis that mind is describable in terms of behavior was first elaborated by Professor Singer in a series of articles in this JOURNAL; 1911, p. 180; 1912, pp. 15 and 206; 1914, p. 645; 1917, p. 337. These papers easily remain the best formulation of the behavioristic standpoint.

and there is also an absolute length, which, because of the error attached to every observation, remains forever unobserved. The real length is the limit of a series of approximations, a *Grenzbegriff*. You focus the cross wires of your micrometer microscope upon the object and you take in succession a number of readings. These readings differ *inter se*. They can not all be "true." It is meaningless to speak of any one as "correct." The arithmetical mean is the "best" approximation. Approximation to what? Why, to the *Grenzbegriff*.

Now I can understand what it means to speak of a limit to the series,

$$1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \dots$$

because each term is formed from its predecessor according to a definite law. But what does it mean to speak of the limit of the fraction,

$$10.7 + 10.1 + 10.3 + \dots + (\text{the } n\text{th observation})$$

divided by n (where the numerator contains the sum of your scale readings), when n is increased without limit? Each reading bears no necessary relation to its predecessor or to its successor. Each one is *accidental* and for any finite number of readings, which is the most you can take, the arithmetical mean is *accidental* too. And so I assert that it is meaningless to speak of the limit of such a series. Or to state the general truth, of which this case is a simple exemplification, the *real* object of perception can not be conceived as *Grenzbegriff* or as the limit of a series of approximations. What these conflicting observations betray is the presence of a mind as an essential part of the total situation and not the presence of an absolute object.³

If there is no absolute object, no more can the mechanical system, in which objects are found, be taken to be absolute. Thus it is not uncommonly supposed that, while the future is in some small measure under man's control, the past must remain irrevocable and quite unchanged. "What is past is past," and "what has happened has happened," are the tautologies, which are supposed to force this truth upon us. No doubt at all about the tautology itself. But what is past and *what has happened* are exactly the matters which ever have been and will ever be in dispute, world without end. Having gone thus far I am quite prepared to go further and I shall venture to assert that the past is no more irrevocably determined than is the future. It is just as plastic, just as amenable to our

³ See the article, "A Spirit which Includes the Community," this JOURNAL, Vol. XVIII, No. 18.

interpretations. What was the azoic age, you may well say, when no one was there to observe it? *An sich* it was like nothing so much as nothing at all. It all depends upon what observer you *imagine* to have been present. It is nothing, if not the product of his experience and his reflection. To the soul of Empedocles, seated it may be these two millenniums on the rim of Saturn, it has seemed, you may be sure, a mingling and unmingling of the four elements, earth, air, fire and water, guided by the opposite principles of love and hate. To the "Copernicus of antiquity" and some of the later Pythagoreans it would have had a heliocentric east, and to Newton it would have been without doubt a collection of masses attracting one another directly as the product and inversely as the square of the distance between their centers. Not only is the past plastic in the same sense in which the future is plastic, but it is ever being made to conform more and more to deep-lying human desires. I mean, too, that these desires, being as often as not misguided, are as constantly being given up in the light of an experience that is ever enriching itself.

There remains the question: what is the place of consciousness in a world thus mechanically ordered? Our answer must be brief, for the argument is already well known. Let one illustration suffice. I am quite unaware, of course, physiologically speaking, what a "prick" of conscience may turn out to be. In order to have before us a concrete example, which in the case contemplated is to speak medically, let be granted that a "prick" of conscience is the same thing as a spasm along a yard or two of the intestinal tract. Does any one suppose that the owner of this "apparatus" of conscience is the only one in a position to observe the significance of its behavior? No doubt he is favorably "placed" to interpret it as a summons to action of some appropriate sort. But is he the only one in a position to offer judgment? In point of fact the opposite is very frequently the case. His physician, or it may be his father confessor, who is privy to some shady financial transaction of his, may easily diagnose his case better than he can judge it himself. He may not even recognize his persistent malady as a prick of conscience at all. His physician, or his friend, it may be, recommends him to go and do otherwise; his malady disappears and is followed by a peace which surpasses even that small understanding which he has of himself and his world. It is nowise affirmed that a physiological description of what a prick of conscience may be exhausts all of the meaning therein contained, for such a happening may have far-reaching social and esthetic consequences. Set down in New England and become universally "bred in the bone,"

it may be fairly decisive of the character of a literature and of the domestic habits. A spasm along a yard or two of the intestinal tract may or may not be a great deal more than *just* that. This simple view, that more than mechanism can be seen in a world seen to be mechanically ordered, will yield an answer, I think, to all of Mr. Lovejoy's five conundrums.

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THE ANCIENT LANDMARKS: A COMMENT ON SPIRITUALISTIC MATERIALISM

"Remove not the ancient landmark." *Proverbs*, XXII: 28.

"*Philonous*. Tell me, Hylas, hath every one a liberty to change the current proper signification annexed to a common name in any language? For example, suppose a traveller should tell you, that in a certain country men might pass unhurt through the fire; and . . . you found he meant by the word *fire* that which others call *water*. . . . Would you call this reasonable?"

"*Hylas*. No; I should think it very absurd. Common custom is standard of propriety in language. And for any man to affect speaking improperly, is to pervert the use of speech and can never serve to a better purpose than to protract and multiply disputes where there is no difference of opinion."

—Berkeley, *Dialogues between Hylas and Philonous*, II.

In my recent philosophical wanderings I have met a surprising number of travellers who seem to mean "by the word *fire* that which others call *water*." I have, for example, encountered, in the successive spring numbers of the *Philosophical Review*, two who appear to me to play very fast and loose with the terms "spiritual" and "material." (i) One of these, Professor Sheldon, writes in defense of what he calls "positive" or "enlightened" materialism,¹ though he fills the greater number of his pages with "the indictment of materialism"² of the popular type, the description of mind and consciousness "in terms of physical process."³ In these pages Dr. Sheldon sets forth what he calls "the definite incompatibilities between admitted facts of consciousness and . . . material process."⁴ Of the specific properties of consciousness which are incompatible with the conditions of material reality he especially stresses the following: first, the "presence of the past in memory";⁵ second, the annihila-

¹ "The Soul and Matter," by W. H. Sheldon. Read as the President's Address at the December, 1921, meeting of the American Philosophical Association (Eastern Division). *Philosophical Review*, 1922, XXXI, pp. 103-134.

² *Ibid.*, p. 110².

³ *Ibid.*, p. 109³.

⁴ Pp. 128² *et al.*

⁵ Pp. 110² f.

tion of distance, in the perception of far-away objects;⁶ third, the fact that "in selective attention what physically is, psychically is not";⁷ fourth, the effectiveness of the future event in purposed action;⁸ finally, the "self-continuing" aspect of pleasure⁹ and the self-checking tendency of pain.¹⁰ The first three of these are "incompatibilities of cognition" from which Sheldon derives the conception of mind as "a unity both inclusive and exclusive, or preferential."¹¹ From the incompatibilities of affection-eognition he argues that mind possesses "an organic systematic character that makes [it] into an independent agent."¹¹ For he rightly insists that "there are no impersonal bits of consciousness," that "there is no consciousness that has not selfhood";¹² and he stresses over and over again "that individuality which constitutes a self."¹³ His general conclusion is that "materialism, conceived in exclusive terms, denying unique spiritual being, is false."¹⁴

But at this point Sheldon's argument makes a sharp turn. He reminds us that the mind "occupies space and time," that "it acts upon the external world," that "it resides in living organisms and extends itself far beyond the limits of those organisms, without losing its place in the latter."¹⁵ The student of philosophy will recognize this as little other than Henry More's conception of the extendedness of spirit. But Sheldon, so far from concluding that extension is spiritual, teaches explicitly that "mind is material, because it displays all the positive attributes of matter," that while "dualism is right in declaring that mind as compared with the matter of our sense-world is unique; dualism and spiritualism are quite wrong . . . when they deny materiality and substantiality to mind."¹⁶ And he enlarges this initial doctrine of mind as "material" by a hypothetical conception of matter in a new sense. "There might be," he says, "a kind of body which . . . would be material because it offers resistance and possesses inertia" which would yet "have one surface in two places at once"; and "there might well be atoms," unlike those "which the evidence of sense observation leads us to believe in . . . equally material, because equally potent

⁶ Pp. 112² f.

⁷ P. 117¹.

⁸ P. 118.

⁹ P. 124².

¹⁰ P. 126³.

¹¹ P. 128³.

¹² P. 128².

¹³ P. 116².

¹⁴ P. 128⁴. Cf. p. 132¹.

¹⁵ P. 132¹.

¹⁶ P. 132¹.

in controlling the motions of other atoms, which exercise their powers in many places at once.”¹⁷

The theory thus briefly summarized is immensely significant in its stress on the substantiality and individuality of mind and in its call upon “a spiritualistic psychology” for a statement of the “precise laws” of mind.¹⁸ As enlightened materialism the doctrine may, to be sure, be challenged at several points. One may, for example, call attention to Sheldon’s unargued identification of the “physical” with the material¹⁹ and to his parallel claim of “the evidence of sense observation” for materialism.²⁰ Or again, one may point out that so long as Sheldon “deliberately” neglects to take into account personalistic philosophy²¹ he can hardly argue that his “enlightened materialism, freed from the negations . . . men have read into it, forms the *only* warrant of substantiality to the self.”²² For substantiality, in the sense of persistence through change, is precisely one of the characters of the personalist’s self. But the main purpose of the present paper is neither to emphasize the significance of Sheldon’s rediscovery of mind nor to criticize his doctrine of its extendedness but simply to challenge his right to the term “materialism” as descriptive of his doctrine. For Sheldon’s conception of “the absolute reality of both matter and mind”²³ is, as he himself sometimes recognizes,²⁴ a form of dualism. And certainly a philosophy which begins by arguing the existence of unique spiritual being is not materialism in the sense which the usage of centuries has given to the word; a doctrine which “forms the only warrant of substantiality to the self” is neither “positive” nor “enlightened” *materialism*. Anybody with a vestige of respect for “ancient landmarks” in language will protest to the end against this “perversion of the use of speech.”

(ii) Professor Sheldon, as has appeared, seeks to materialize the mind. The aim of Professor Loewenberg is, on the contrary, to spiritualize matter.²⁵ This feat he readily accomplishes by the simple device, on which his whole argument turns, of identifying the “spiritual” with the “valued,” or “significant.” Thus he refers to “meaning, significance, dignity, rationality—in short, spiritual-

¹⁷ Pp. 1302–131.

¹⁸ *Op. cit.*, p. 133.

¹⁹ P. 131 *et al.*

²⁰ P. 1311. *Cf.* p. 1332 *et al.*

²¹ P. 1068.

²² P. 1291. *Italics mine.*

²³ P. 1332.

²⁴ P. 1291.

²⁵ *Cf.* J. Loewenberg, “The Apotheosis of Mind in Modern Idealism,” *Philosophical Review*, 1922, XXXI, pp. 215 ff.

ity";²⁶ and he explicitly uses "spirituality" as synonym for "congruity with ideals."²⁷ Once this meaning is attached to the term, Loewenberg brilliantly demonstrates that mind may be "essentially unspiritual"²⁸ and that "matter is capable of sublimation as much as is mind."²⁹ For on the one hand, mind may be, as Schopenhauer describes it, "blind, foolish, capricious, sordid and miserable";³⁰ on the other hand, materialism is "accepted by its votaries" as satisfying both the spiritual "sentiment of rationality"³¹ and "the quest for unity . . . behind and beyond the superficial medley and flow of things."³²

I have no quarrel with these conclusions. Like all technically trained contemporary "idealists," I do not dream of denying either the "speculative possibility" of a world that is "through and through mental, but . . . at variance with our ideals"³³ or the fact that materialism may well satisfy genuine "human needs" of those who hold it. Nor am I concerned with the virtual implications of Dr. Loewenberg's closing paragraphs: that philosophy reduces to a form of differential psychology or to biography,³⁴ that "the assertions of philosophy" are essentially "expressions of conflicting motives and needs" and that "the strife of rival theories in philosophy is a tragic struggle not of competing . . . hypotheses but of incompatible passions and values."³⁵ My main purpose is, once more, to protest against the wresting of a word from its time-honored meaning. The term "spiritual," whatever the divagations in the use of it, has always carried a meaning directly opposed to that of "material." Many idealists, doubtless, before and after and including Leibniz and Berkeley, have combined with a spiritualistic doctrine an uncritical optimism; but, however unfounded their inference from the mental nature of the world to its value, they have not (to my knowledge) confounded the meaning of the term "spiritual" with that of "valued," or "significant." "Spiritual" means simply "pertaining to spirit." The ambiguity in the use of the term is due mainly to the diverse tendencies now to identify "spirit" (after Berkeley's fashion)³⁶ with "mind," "soul," and "self,"

²⁶ *Op. cit.*, p. 219.

²⁷ *Op. cit.*, p. 218¹. Cf. pp. 217², 230.

²⁸ P. 219 *et al.*

²⁹ P. 229.

³⁰ P. 219.

³¹ P. 229.

³² Pp. 230²-231.

³³ P. 218.

³⁴ This is the writer's inference, not a statement of Loewenberg himself.

³⁵ P. 236.

³⁶ Cf. *Principles of Human Knowledge*, II.

again to limit the meaning of spirit and to denote by the word, "mind (or self) in its higher reaches." In either of these uses, however, the spiritual is roughly speaking the personal and, as such, sharply distinguished from the material.³⁷ Dr. Loewenberg's essential conclusions are, of course, unaffected by this criticism of his use of terms. But, stripped of its paradoxical and unhistorical identification of "spiritual" and "material," this portion of his paper, it would seem, reduces to a dispute "where there is no difference of opinion."

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BOOK REVIEWS

The Nature of Existence. Volume I. J. M. E. McTAGGART. Cambridge University Press. 1921. Pp. xxi + 309.

There are some systematic works, even works of philosophy, that may be read as a sort of austere recreation. They may be read for the sheer pleasure of watching the thought sprout and grow in this direction and in the other. We are saying a great deal about Dr. McTaggart's new work when we say that it can *not* be included in this class. If there is any one who has the gift of making crooked paths straight and reducing an obscure or complex argument to absolute lucidity, it is the author of this work. Nevertheless, there are passages, whole chapters indeed, in *The Nature of Existence*, where the reading is about as fluent as the middle chapter of a *Symbolic Logic*. All has been done, one feels, that language can do; yet the thought itself is so involved that, as Professor Broad has said, "it is a remarkable achievement for a writer to have kept his head among all these complexities without the help of an elaborate symbolism."

That this difficulty may not be found in the forthcoming second volume of the work is suggested by the author's statement of his plan. In the first volume he considers "what can be determined as to the characteristics which belong to all that exists, or, again, which belong to existence as a whole." In the second volume he proposes to consider "what consequences of theoretical and practical interest can be drawn from this general nature of the existent with respect to various parts of the existent which are empirically known to us." Throughout this first book the reasoning is rigorously *a priori*. There are only two occasions on which Dr. McTaggart makes any appeal to perception: once to prove that something exists, and again to prove

³⁷ Since Hume wrote, the term "spiritual" has served also to differentiate the personalistic from the ideistic form of idealism.

that this something is not simple; and even of these cases, it is only in the former that he feels such appeal to be necessary. This resolute adherence to the *a priori* is not in metaphysics a matter of choice, he contends; it is a matter of necessity. When the question is what characteristics belong to everything that exists, or to existence as a whole, the use of induction is absurd. Induction proceeds by noting the resemblances among the members of a class: but existence as a whole is not a member of a class of such existences. Again, the number of existent things is infinite, and hence no possible inductive diligence could bring within its purview more than "an infinitely small proportion of the whole." This abjuring of sense experience and adherence to "the high *priori* road" naturally suggests Hegel; and while Dr. McTaggart is careful to distinguish his own method from the Hegelian, he admits that it stands "much closer to Hegel's method than to that of any other philosopher." He is so entirely unimpressed with the arguments that have been brought against the fertility of the deductive method in metaphysics that he offers only a very brief defense, and refers the reader to the answer that has been given by "Mr. Bradley in a passage which I regard as by far the most important and illuminating comment ever made upon Hegel."¹

Some of McTaggart's chief positions may be set in relief by a comparison with those of the contemporary to whom he here so approvingly refers. Bradley, as well as McTaggart, is a metaphysician who still believes that final truth may be gained by the speculative route about the nature of reality and the nature of truth itself. Both believe that "nothing exists but spirit." Both emphasize the distinction between "what" and "that," the "nature" of a thing and its existence. Both maintain that neither of these sides can be without the other; and they would hence agree that such entities as propositions, possibilities and "floating ideas," if regarded—as many realists would regard them—as real but non-existent, are quite gratuitous. Both would regard every judgment as ultimately a judgment of existence, and all reality as ultimately existent. It is no doubt because he holds this view that Dr. McTaggart has given his work the title that it bears, since in studying what exists he considers that he is examining the character of all that is real. Both thinkers, again, agree in the doctrine of degrees of truth and would hold that since the nature of a thing is not independent of its relations to other things, our conception of it must change as its relations are more completely apprehended. And though Bradley's sweeping disbelief in the reality of all relations would set him at last apart from Mc-

¹ *Logic*, Book III, Pt. I, Ch. II, E.

Taggart, both would hold that our knowledge approaches perfection in the degree to which we lay hold of an order of necessity which involves everything in its web.

But with this general agreement, there are striking points of difference which appear at the outset of McTaggart's work. It is evident, for example, that neither reality nor truth means to him what it does to Bradley. For while McTaggart would admit degrees of truth, he would deny that there can be any degrees of the real. " 'A is X' may misrepresent the nature of A less than 'A is Y,' but, unless it is quite true that A is X, then A is not X, and AX is not real at all" (p. 5). Again, what constitutes the truth of a belief is not its coherence with a system of beliefs, but its *correspondence* with the specific fact about which it is entertained. Correspondence does not mean copying; but while we can say what it is not, and can point to examples of it, we are unable to say what it is; it is a relation which is unique and therefore undefinable. It is this difference of view regarding the relation of judgment to reality which explains, I think, the other difference just noted. In Bradley's view the reality judged about is actually present in judgment; "the real Cæsar beyond doubt must himself enter into my judgments and be a constituent of my knowledge."² There is no external and real object to which my judgment, if true, must correspond. My judgment *is* reality affirming itself in part through my mind. Truth and reality become identical, and hence the degrees of each are the same. But for one who holds that the content of judgment is distinct from the fact referred to, and that the truth of the one is quite distinct from the reality of the other, it is clear that a judgment may become more true without the fact's becoming more real. Indeed, since truth belongs to beliefs, and beliefs are psychical events which are continually coming and going, truth too must come and go. Thus a fact may be real but can not be true; while a judgment or belief may be true, but except in its character as psychical event, apparently not real. If I dream of Mrs. Gamp, my dream itself is real, but Mrs. Gamp is not; and if Mrs. Gamp were real, that reality would belong to her and not to any judgment about her. And reality, like existence, is either there or not there. Indeed, although McTaggart distinguishes the existent as *prima facie* only a species of the real, it seems to me that throughout he means by "real" "existing" and nothing more.

Perhaps the most interesting feature of Dr. McTaggart's discussion of truth is its incidental criticism of the doctrine of propositions. These, he maintains, are needless intermediaries between

² *Essays on Truth and Reality*, p. 409.

thought and fact, and on principles of economy may be eliminated. All cases both of true and false beliefs he thinks sufficiently covered by the formulæ that truth is correspondence with the fact referred to, and that falsity is a relation of non-correspondence to *all* facts.

The argument of this volume, after the introductory book, is at once so compact and so complex that nothing beyond an indication of the trend of the argument is here feasible. Having proved that "something exists" by showing in Cartesian style that to doubt it involves the existence of the doubter, and having shown that existence without qualitative content is meaningless, the author maintains that all qualities belong to substances, substance being defined as "something existent which has qualities without being itself a quality." A substance is infinitely divisible, and since each part is also a substance, the number of substances is infinite; while, further, the nature of each is distinct. The author's main problem is now to determine the types of relation which bind substances and their qualities together. Of these perhaps the most important are what McTaggart terms intrinsic and extrinsic determination; the first of which is the implication between characteristics in virtue of which inference is possible, and the second of which is a relation of interdependence which unites every quality and every substance in such a way that, given the alteration of the slightest detail anywhere, we could not with confidence expect anything to be the same. With this relation established, McTaggart proceeds at once to the contention that the universe is an "organic unity," a conception which (probably with memories of the bitter history of the term) he takes a separate chapter to define. The last division of the book is devoted largely to the working out of a very elaborate relation called "determining correspondence" between the various substances in the universe, a relation which is devised to meet, and which McTaggart believes does meet, the contradiction apparently presented by the infinite divisibility of substance.

It seems likely that this work will first gain its proper estimation at the hands of that increasing group of thinkers who are at home on the borders of mathematics and philosophy rather than from those who have confined themselves to the more traditional modes of thought. Whatever their verdict, it is clear that Dr. McTaggart has given us one of the most lucidly written, thoroughgoing and competent books on metaphysics that have appeared in many a year.

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The Truths We Live By. J. WILLIAM HUDSON. New York: D. Appleton & Co. 1921. Pp. x + 308.

A presentation of truths we live by need not be startling. On the contrary, a veracious work of art makes us feel at home. We recognize its truths as old friends and commend its essential triteness. There is a sense of familiarity but of a different sort, to be had from reading Professor Hudson's book. It continues a philosophic tradition but lacks the feeling of reality.

It is addressed to men and women "who have not specialized in philosophy, and are, nevertheless, interested in life's greater problems" (p. x). It proposes to forward moral reconstruction by attacking a certain current skepticism which adduces the findings of science and the history of morals as evidence that no ideals are absolutely valid.

The conflict over the comparative value of such specific ideals as self-sacrifice and pleasure, Mr. Hudson disposes of by the argument that "all conflicting moral ideals imply a moral end that includes them all and transcends every one of them" (p. 27). This end may be called self-realization.

His second and larger aim is to show that the beliefs necessary to moral confidence are as certain as the presuppositions of science and are arrived at in the same way. They are outside the range of specific sciences but are as demonstrable as scientific laws are.

He says, "We justify the great underlying laws of science, such as the Law of Universal Causation, by the fact that we want science; we justify science in turn through the fact that we want life" (p. 107).

Since desire is the fundamental characteristic of life, reason must serve it by accepting what it demands. The truths, therefore, that are necessary for a moral life must be received in the same way that the scientist assumes Universal Causation. Mr. Hudson thinks there are four beliefs which are thus "demonstrable."

The first of these is the belief "that the universe is at bottom a moral order; that is, an order in which righteousness will certainly triumph or at any rate has a chance to triumph" (p. 53). For the purpose of the argument this latter reservation is dropped and we are told that "we are to believe in the *utter* triumph of the good if our moral confidence is to be sure; and it must be sure" (p. 55). Such confidence involves belief in personal immortality, in God and in freedom of the will.

The will to live, which is at the center of the evolutionary process, becomes, in human beings, the will to live a specific kind of life.

And the ideal life of perfect goodness, truth, and beauty for which men strive requires infinity for its development. Immortality is thus one of the great verities.

Analysis of the idea of God turns, in Mr. Hudson's mind, into a demonstration that God is real, not only ideally, but existentially, "as you and I are real" (p. 175).

The ideal is a dynamic good which includes the struggle to reach it; it includes nature, since nature is not wholly indifferent to man's uses; and it is the ideal for all humanity. Professor Hudson's unexpected conclusion is, "The Perfection we seek is the infinite Series of our deeds including all of nature and the lives of all our fellows" (pp. 182-183).

"This 'totality of things' suddenly emerges as something more than that God which science gives us under that phrase. It is no longer, rightly interpreted, a mere aggregate of facts . . . but it is a moral order, a Life, realizing itself through infinite time" (p. 183).

To the belief in immortality and God, thus achieved, Mr. Hudson adds the conviction that our wills are absolutely free. If we are to be held accountable for our deeds we must have the power of freely choosing "regardless of previous events in the outer world, in spite of our previous character and of all the experiences that have tended to make us what we are up to date" (p. 228). For such choosing, Mr. Hudson is forced to conceive of an ego behind the scenes. In order that it, in turn, may be free from any taint of influence, he says we may think of it as uncreated and co-eternal with God.

The argument will doubtless be convincing to many of the readers to whom it is addressed. The painstaking care with which it is presented will perhaps nullify the effect of the unexpected conclusions which so often, to use Mr. Hudson's own word, emerge. Some of the most evident objections to his argument the author has met. He admits his proof to be dialectical but denies, quite correctly, that he sanctions any belief which we merely *wish* to accept. He has shown what many "moderns" need to remember, that the science which is quoted as authority in every field of human thought has in reality nothing to offer upon many subjects of the utmost importance. This merely means that intelligent investigation still has something to do. It does not mean that we must have recourse to dialectic in order to discover the facts of existence.

Mr. Hudson's argument is confused whenever it touches upon the nature and validity of scientific hypothesis. It is true that

science is justified as a human pursuit only if it contributes to human well-being; that fact, however, is neither the basis nor the justification for its hypotheses. Speaking with tongues might be justified on the grounds of edification; its deliverances would be, none the less, nonsense.

Again, when he speaks of ideals, Professor Hudson's argument is not clear. He sees that human desire is the first word in the moral life and that harmony is the form which the good life will take. Yet he falls back into an absolutism which can conceive "only one Perfect." Furthermore, he is not content to let ideals be ideal. God must exist.

Professor Hudson has attempted to clarify popular ideas of the relation of science and ethics, but his contribution misses its aim because it is based upon a confusion in method. The most significant parts of his book are the distinctions which he makes and then ignores.

NEW YORK CITY.

MARY SHAW.

JOURNALS AND NEW BOOKS

THE PHILOSOPHICAL REVIEW. XXXI, 4. July, 1922. Valuation and Experimental Knowledge: *John Dewey*. Humor and Bosanquet's Theory of Experience: *Katherine Gilbert*. Possession and Individuality: *E. Jordan*. An Approach to Idealism: *Frank E. Morris*. Rosmini, Bonatelli, and Varisco, on Consciousness: *James Lindsay*.

REVUE PHILOSOPHIQUE. XLVII, 7-8. July-August, 1922. Numero exceptionnel: Les Théories d'Einstein sur la Relativité. La signification philosophique de la théorie de la relativité: *H. Reichenbach* (trans. par *M. Léon Bloch*). Pour l'intelligence de la relativité: *G. Cerf*. Einstein et la métaphysique: *Ed Goblott*. Le temps et l'espace du sens commun et les théories d'Einstein: *E. Richard-Foy*.

PSYCHOLOGICAL REVIEW. XXIX, No. 3. May, 1922. The Ontogenetic Significance of Instinct, Habit, and Intelligence: *James L. Mursell*. Practical Logic and Color Theories: *Christine Ladd-Franklin*. The Significance of Psychical Monism: *Leonard Troland*. Synaesthesia, A Form of Perception: *Raymond Wheeler* and *Thomas Cutsforth*. A Comparison of Mental Abilities of Mixed and Full Blood Indians on a Basis of Education: *Thomas R. Garth*. Discussion: Induction and Radical Psychology: *Victor S. Yarros*.

Bergson, Henri: *Durée et Simultanéité. A propos de la Théorie d'Einstein.* Paris: Félix Alcan. 1922. viii + 245 pp.

Carr, H. Wildon: *A Theory of Monads. Outlines of the Philosophy of the Principle of Relativity.* London: Macmillan & Co. 1922. 350 pp.

Cox, George Clarke: *The Public Conscience.* New York: Henry Holt & Co. 1922. xix + 483 pp. \$3.00.

Ginsberg, Morris: *The Psychology of Society.* New York: E. P. Dutton & Co. 1922. xvi + 168 pp. \$2.50.

Nordmann, Charles: *Einstein and the Universe.* Trans. by Joseph McCabe. New York: Henry Holt & Co. 1922. xvi + 240 pp. \$2.50.

NOTES AND NEWS

We have received the first number of Volume I of the *Arkiv för Psykologi och Pedagogik* from the Library of the Royal University of Upsala, Sweden. The *Arkiv* is a continuation under a new name of the *Revue Psyke* which ceased publication in 1920.

During the academic years 1922-23 and 1923-24, the Gifford Lectures at the University of St. Andrews will be given by Professor C. Lloyd Morgan of Bristol. "Evolution, Emergent and Creative" will be the subject of these lectures.

THE JOURNAL OF PHILOSOPHY

TIME, MEANING AND TRANSCENDENCE

I. THE ALLEGED FUTURITY OF YESTERDAY

I AM greatly obliged to Professor Dewey for the careful and extended comment¹ with which he has honored my contribution to *Essays in Critical Realism*. Philosophers of eminence have not always been equally ready to enter the lists and join issue directly, and point by point, with their critics. Mr. Dewey's two papers, therefore, are an encouraging manifestation of belief in that conception of the philosophic quest of truth which makes it consist in an essentially social and coöperative process of intellectual experimentation, wherein all philosophical theses, arguments and distinctions are cast into the alembic of searching, patient, analytic discussion by many and diverse minds. I do not, indeed, find that, in the present instance, great progress has as yet been accomplished towards actual agreement. But that, doubtless, is a result which could hardly be expected after a single exchange of views. Meanwhile Mr. Dewey's articles seem to me to do a good deal to make more clear the nature, the grounds and the causes of disagreement. And I am hopeful that a continuance of the discussion may still further clarify not merely these matters, but the important philosophical issues which they involve.

What those issues are it is doubtless well to remind the reader. In the essay with which Mr. Dewey's articles are concerned I attempted to vindicate, among others, the two following theses: (a) that all practical or instrumental knowledge is, or at least includes and requires, "presentative" knowledge, a representation of not-present existents by present data; (b) that "pragmatically considered, knowledge is thus necessarily and constantly conversant with entities which are existentially transcendent of the knowing experience." As the simplest and least dubitable example of such

¹ "Realism without Monism or Dualism," this JOURNAL, XIX, pp. 309-317, 351-361. These papers will be here cited as *R. M. D.*, and the *Essays in Critical Realism* as *E. C. R.*

transcendent reference, and therefore as a crucial instance, I cited our judgments of retrospection and anticipation. In them, it seems obvious to most men, we "mean" and know entities which are not directly given in experience at the moment when they are known, inasmuch as they do not then form a part of the existing world. In justifying both the general theses mentioned, and the particular instance of judgments about the past, I was under the necessity of controverting views which had been expressed by Mr. Dewey and which seemed to me an aberration from the true logic of his own pragmatic doctrine. Though not without some ambiguity of language, he had seemed to maintain that the object meant or known in valid judgments must always be "directly experienced"—an assertion which, if taken literally, would imply the impossibility of intertemporal cognition, of the knowing of one moment's experience at another moment. And in fact, with respect to the special case of knowledge of the past, Mr. Dewey had been led by his "principle of immediate empiricism" into an apparent denial of its possibility.² Because the past object is transcendent of the experience that knows it, is "past and gone forever," Mr. Dewey had in numerous passages betrayed a curious reluctance to admit that the past as such can be said to be "known" or "meant" at all. This paradox is in truth, as I have previously contended, an inevitable consequence of the attempt to escape epistemological dualism by denying the transcendence of the object known.

The same paradox the first part of Mr. Dewey's reply seems to reaffirm and even sharpen; for its argument leads up to such assertions as: "the present or future constitutes the object or genuine meaning of the judgment about the past";³ in retrospective judgments "the actual thing meant, the object of judgment, is prospective";⁴ "the past occurrence is *not* the meaning of propositions" of this type.⁵ And since he has, as he thinks, overthrown this supposed crucial instance of the transcendent reference of knowledge, Mr. Dewey concludes that he has proved it "possible to drop out the epistemological theory of mysterious 'transcendence.'" While, for reasons to be mentioned later, I doubt whether these propositions mean what they say, I shall first assume that they do so, and shall review Mr. Dewey's argument as an attempted proof of them.

² For example see *E. C. R.*, pp. 42-4, 52-4, 63-71.

³ See *R. M. D.*, p. 313.

⁴ *R. M. D.*, p. 314.

⁵ *R. M. D.*, p. 312; italics in original.

1. The first argument consists in the contention that it is "only when the past event which is judged is a going concern having effects still directly observable" that "judgment and knowledge are possible." But this proposition, which is given the emphasis of italics, is, I suppose, denied by no one; I, at least, am far from disputing it. Obviously, the ground of present belief must be a present ground; the evidence which can to-day justify a judgment about yesterday's events must be evidence existing to-day, not yesterday. Nor do I see any objection to converting this truism into Mr. Dewey's proposition that "the true object of a judgment *about* a past event may be" (I should even add: in the case of scientifically verifiable judgments, must be) "a past-event-having-a-connection-continuing-into-the-present-and-future." Since we do not regard as now knowable (in the usual sense of "knowledge") past matters of fact which have left no now discoverable trace of or witness to their reality, we may properly enough say that the *complete* "object" of any genuine piece of verified knowledge of the past is a past having effects, direct or indirect, surviving in the present (memories being included among these effects). In other words, continuity—usually of the causal sort—with the present is undeniably a *part* of the meaning of the expression "known past event." But the part is not the whole; and it is upon a distinction so simple as this that Mr. Dewey's first argument breaks down. For the matter at issue has to do solely with that part of the total object of a judgment about the past which *is* past. Mr. Dewey seems to suppose that when it is shown that any valid and verified retrospective judgment contains at least an implicit reference to the present and future, we are thereby relieved of all logical concern about its primary reference to the past. It is as if an astronomer, observing in the spectrum of a star both red and yellow rays, should say to himself: "This red is evidently merely a red-in-connection-with-yellow; it will therefore suffice, in my study of the star, if I consider only the yellow, disregarding any problems which may have to do solely with the red." But, as Mr. Dewey's own expressions inevitably and repeatedly concede, the past reference still remains, an essential aspect of the present cognitive experience; and with it remains the justification for the contention of the portion of my paper under discussion.

2. Mr. Dewey, however, seeks to justify the monopoly of his philosophic attention enjoyed by the present and future part of a retrospective judgment's reference, by means of a distinction between "object" and "subject-matter"; and it is upon the application of "this generic and indispensable distinction" to that class

of judgments that he seems finally to rest his ease. By "subject-matter" he signifies the "accepted considerations" in any inquiry, the things known, or taken as known, in order that they may lead to a knowledge of something else which at the outset of the inquiry is not known. The "object" is this something else, which *becomes* a "thing known," an accepted consideration, at the successful conclusion of the inquiry. Thus in a court of law the verdict "contains the object, the thing meant; evidence presented and rules of law applied furnish subject-matter." The distinction itself is unexceptionable, though more sharply contrasted terms might have been found to express it; but Mr. Dewey's way of applying it "to analysis of judgments about the past" seems to me really very odd. In such a judgment it is "the nature of the past event" which he identifies with the "subject-matter," on the ground that it is "required to make a reasonable judgment about the present or future"; the latter "*thus constitutes the object or genuine meaning of the judgment.*" Hence, "there is nothing forced or paradoxical about the view that in *all* such cases the actual thing meant, the object of judgment, is prospective."⁶ *Q. E. D.* The paleontologist will thus learn, with some surprise, that when he is seeking to determine whether a certain fossil animal was contemporaneous with paleolithic man, the "actual thing meant" by his inquiry, the "object or genuine meaning" of the judgment which he reaches at the end of it, is not an organism that has been extinct for ages, nor even present fossil remains, but something "prospective." As for that class of judgments about the past which are the specialty of courts of criminal law, Mr. Dewey's previous application (cited just above) of his distinction to these judgments now manifestly requires not merely revision but reversal. In a coroner's inquest, for example, the "nature of the past event" under inquiry is the manner in which the deceased came to his death; which is therefore the "subject-matter" of the inquiry; which in turn means, by Mr. Dewey's definition, that it constitutes the "accepted considerations" in the case; while "the evidence presented"—though *it* is classified as "subject-matter" only a few lines earlier in Mr. Dewey's paper—must in the light of his present conclusion be removed from that class (and so from that of "accepted considerations") and be described as the "still unattained object" of the inquiry!

⁶ *E. M. D.*, pp. 313, 314; italics mine. The distinction between object and subject-matter, as here used, seems to be merely another phrasing of that between "reference" and "content" employed for the same ends in *The Influence of Darwin upon Philosophy*, p. 61. Cf. my comment on this, *E. C. R.*, p. 67.

How has it come about that Mr. Dewey thus reverses, in the course of a single page, the meaning of his own terminology for expressing this "indispensable distinction"? The origin of the confusion is perhaps not beyond the reach of analysis. If he had adhered to his original definitions, it would have been obvious that, in any inquiry into the nature or reality of a past event, the "accepted considerations," and therefore the "subject-matter," must, as he himself in other passages often reiterates, consist of present data—the testimony of the witnesses, the character and situation of the fossil. Thus the superior status of "object" would have fallen to the lot of the past event to which the inquiry relates. This result, however, would be contrary to Mr. Dewey's main thesis; and consequently, another distinction seems to have been unconsciously substituted for the original one, while the same pair of terms is retained to express it. The new distinction actually seems to turn upon a play on the double meaning of the word "object." In the original distinction the word, of course, meant simply the thing referred to in a judgment; it now means the purpose or interest which leads one to ask the question which the judgment answers: "the object is the fulfilment of an intention." Thus—as Mr. Dewey illustrates—if I ask myself whether I mailed that letter yesterday, the "object" of my inquiry is to get answers to such questions of present or future interest as these: "What is the state of affairs between some other person and myself? Is his letter acknowledged or no; is the deal closed, the engagement made, the assurance given or no?" Now, of course, the "object" of an inquiry or judgment—i.e., of the raising of the inquiry or the making of the judgment—in this sense of the term is undeniably always present or future. My object, the fulfilment of my intention, in doing anything is necessarily synchronous with or subsequent to the doing. But the illicitness of the substitution of this sense of "object" for the former needs no pointing out. Yet it is solely by means of this unconscious pun that Mr. Dewey gives even a semblance of plausibility to his conclusion that "the object of a judgment is always prospective."

When we revert to his original, and only pertinent, definition of object—"the true object of a judgment about a past event [must] be a past-event-having-a-connection-into-the-present-and-future"⁷—it becomes evident that it is not only arbitrary but absurd to single out from that total "true object" of the judgment one part, the present and future part, and apply to it exclusively the eulogistic descriptions of "*the* object or genuine meaning of the judg-

⁷ *E. M. D.*, p. 311.

ment," "the actual thing meant." The absurdity, of course, consists in the fact that, if any part were to be singled out for such preferential treatment, it would be precisely the part to which Mr. Dewey, in his final conclusion, refuses recognition; as his own language shows, the judgment is, after all, "a judgment *about* a past event." In other words, the present and future facts included in what he regards as the total object of such a judgment are admittedly *logically* instrumental to a knowledge of the past fact. True, the past fact, once known, may in a subsequent moment, when reflection is directed to other issues, serve as the means of proof of something else. But to let this obscure the respective logical rôles of past fact and present and future facts in the original, actually retrospective, inquiry is to fall into the fallacy against which Mr. Dewey himself has warned us—that of failing "properly to place the distinctions and relations which figure in logical theories in their temporal context," of "transferring the traits of the subject-matter of one phase to that of another, with a confusing outcome."⁸ Having arrived at the retrospective conclusion that *A* killed *B*, a court may then proceed to the prospective conclusion that *A* ought to be hanged. Doubtless—if Mr. Dewey insists on his pun—the court's "object" in the former inquiry was to determine whether or not *A* shall be hanged. But this does not alter the fact that during the trial the court's function consists in looking backward, and that the distinction between the verdict, which is mainly the business of one set of men, and the sentence, which is usually the business of another man, is that the former constitutes an assertion about what has happened and the latter implies an assertion—in American courts, of a rather low order of probability—about what is going to happen. If, indeed, pragmatist writers could only be persuaded to master the distinction between a verdict and a sentence, they might discover why it is that their critics find in their writings a constant and baffling confusion of temporal categories.

Let me now briefly recapitulate. Mr. Dewey's attempt to justify the thesis that in judgments about the past "the actual thing meant, the object of judgment, is prospective," consists of two arguments: (a) He observes that the "true," *i.e.*, the total, object of any retrospective judgment, if regarded as verifiable, *includes* present and future facts which are the means of its verification. This is true but irrelevant. The object of such a judgment *also* includes past facts; these do not lose their pastness by their "connection with the present"; and it is with them that the issue raised in my paper had to do. (b) His other argument resolves itself into the

⁸ *Essays in Experimental Logic*, p. 1; cited in *E. C. R.*, p. 78.

substitution of one sense of the expression "object of a judgment" for another sense—namely, of the sense "fulfilment of the intention which prompted the making of the judgment" for the sense "thing or event logically referred to by the judgment." The proof of the "prospectiveness" of the judgment's reference is based upon the former meaning, but the conclusion is illicitly transferred to the latter. Both arguments thus fall to the ground. Yesterday, *quâ* yesterday, still remains irreducibly external to to-day, existentially transcendent of all the present thinkings and knowings which have to do with it and all the present, immediately experienced data which give circumstantial evidence concerning it. Mr. Dewey, therefore, has in fact done nothing to "eliminate the machinery of transcendence and of epistemological dualism," or to show (in the sense required by the argument) that "we are never obliged, even in judgments about the remotest geological past, to get outside events capable of future and present consideration."⁹

3. The sentence just quoted, however, is worth dwelling upon; for it excellently illustrates a certain elusiveness of import which seems to me highly characteristic of the entire argument. The reader will have observed that everything, in the interpretation of the sentence, depends upon the meaning assigned to the words "capable of future and present *consideration*," and that these words may bear either of two meanings. They may most naturally be taken to mean "capable of being *thought of* in the present and future." So taken, the sentence embodies the most harmless of truisms; undeniably, "even in judgments about the remotest geological past," we never "get outside events" which may be objects of present or future thought. But here it is the thought and not the thought's object that is present or future; and therefore, so taken, the sentence has no pertinency to its context. It is by no means equivalent to the proposition with which it seems supposed to be synonymous, viz., that "the *actual thing meant*, the *object of judgment*, is prospective." To make it fit the context, therefore, the reader's mind is likely to transfer the futurity or presentness mentioned from the thought to the object. So taken, the sentence becomes pertinent but it also becomes the most glaring of paradoxes. And it is, so far as I can see, from this quick and delicate,—and, of course, unconscious—shifting of meanings and of matters-referred-to, that the argument must gain whatever interest and plausibility it can conceivably possess, for Mr. Dewey or anyone else. It is the paradoxical sense of the ambiguous proposition which gives it its interest, its appearance of novelty and importance, and it is

⁹ *R. M. D.*, p. 316.

its platitudinous sense which gives it its appearance of truth and even self-evidentness; and either end of the thing, or both in rapid alternation, may be turned towards the bewildered critic of pragmatism, as the exigencies of controversy require. It is just such an unwitting shift of meanings that renders in some degree intelligible (certainly nothing else can do so) Mr. Dewey's insistence that "there is nothing forced or paradoxical" about his principal thesis. Taken as stated and in the natural sense of its terms, the proposition that the "actual thing meant" by a retrospective judgment is prospective, is as evident and as queer a paradox as philosopher ever penned. But taken with certain qualifications which are sometimes suggested—and which really reverse the meaning—it is indeed no paradox, but a commonplace. The qualified meaning of the statement seems to be that already discussed, namely, that *among* the things at least implicitly "meant" by a judgment about the past, *in so far as that judgment is conceived as verifiable*, are present and prospective data of experience. But for this simple and unimpeachable statement is speedily substituted language which, by the usual rules of English speech, should signify that the *sole* "actual thing meant" in such a judgment is something present or prospective. And here again the truth of the first proposition throws its mantle over the paradoxicality of the second, while, reciprocating the service, the paradoxicality of the second gives to the truth of the first an air of unfamiliarity, of deep and stirring revelation.

And in this lies, I think, the real nub of the difficulty in the present discussion. It is, I am convinced, this fashion of treating as equivalent and interchangeable the two meanings of an ambiguous proposition that gives the pragmatist the illusion of having discovered a new way of escape from old dilemmas; and it is this, he ought at any rate to be told, which makes his reasonings, to some of his readers, puzzling and elusive to the last degree.¹⁰ And now that the point has been made explicit, I venture to hope that Mr. Dewey will face the distinction indicated and will tell us plainly which of these two very different things he means to assert: (a) the flagrant paradox that the only "thing meant," in a judgment about the events of yesterday, is future or "prospective"—"a blank denial that we can think of the past," as a philosophical correspondent of mine puts his understanding of Mr. Dewey's meaning; or (b) the familiar commonplace that we form judgments which relate to actual past events, but that these judgments constitute

¹⁰ The play upon the meaning of "object," already noted, is another case in point.

verifiable knowledge only in so far as the past events are causally connected with present or future existents which can serve as means of verification, and that our motive in judging is always some present interest. The choice of either alternative would compel Mr. Dewey to abandon one part or another of the complex of propositions making up his form of pragmatism. If he elects the first, he will thereby deny such judicious observations as he himself has often made, to the effect that "detached and impartial study of the past is the only alternative to luck in assuring success to passion"; and, in general, will repudiate not merely a primary conviction of common sense, but a necessary presupposition of the method of the empirical sciences. If he elects the second meaning of his equivocal thesis, he is—as has already been sufficiently shown—then faced with the admitted existential externality of the past object—or, if he prefers the phrasing, the past part of the object—of the judgment. The case for epistemological dualism based upon the actual pastness of the object, or an object, of the retrospective judgment would therefore remain unshaken. And, it must be added, even if the more extreme version of his contention about these judgments were made out, the main issue concerning transcendence would not be vitally affected; for a "prospective" object is as manifestly transcendent as a past object. In short, all that Mr. Dewey even attempts to do is to substitute one mode of transcendence for another.

4. Mr. Dewey concludes his first paper with a counter-attack, charging me, and apparently critical realists generally, with a "subjectivism"¹¹ from which he represents his own version, though not all versions, of pragmatism as free. The subjectivism alleged consists in the view that, since our retrospective judgments mean but do not actually include and possess the past, belief in their validity, in the existence of the past to which they refer, involves an element of alogical faith, explicit or implicit. At any given moment of reflection the testimony of his memory is the only evidence any man possesses as to any empirical fact whatever, beyond the immediately present sense-data; but the testimony of memory can not itself be empirically verified. My entire store of recollec-

¹¹ It is unnecessary to comment at length on Mr. Dewey's assertion that my view—and any dualistic or monistic realism—implies that "isolated, self-complete things are truly objects of knowledge." "Isolated" past events are, in the sense that they are external to the present; isolated they are not, and are not by the realist held to be, in any sense which denies their "connection with past and future." Mr. Dewey is here (p. 315, foot) attacking a man of straw, the misdirection of his attack being due to a failure to discriminate between logical distinction and lack of causal connection.

tions may conceivably be illusory; that they are not can not be proved, and belief in their general trustworthiness is therefore an instinctive and practically necessary assumption which outruns proof. This I had always supposed to be a universally accepted, though an important, truism. But Mr. Dewey rejects it. Never will the true pragmatist "isolate the needs or propensities of the agent and regard them as grounds of belief in the validity of meaning." As against the realist's weak yielding to "instinctive propensities," the pragmatist insists austere upon "logical verification."

Now if Mr. Dewey has really discovered a way out of this ancient *impasse* of thought, has found a strictly "logical" means of verification of the reality of yesterday and the validity of retrospection *as such*, he has, assuredly, made a most momentous contribution to philosophy. But the discovery, if made, is not disclosed in his paper. None of the three considerations which he adduces prove the possibility of any such verification. (a) He apparently thinks that those who deny the possibility of a strict verification of the *general* belief in a real past and of the *general* trustworthiness of memory, as it exists from moment to moment, must dispense with logic altogether and follow merely their "instinctive propensities" in deciding what *particular* judgments about the past they will believe and what reject. But this by no means follows. The structure of any logical system of empirical beliefs is obvious enough. We first postulate, or implicitly assume, that there *was* a past and that our present memories constitute a source of knowledge concerning it, except in so far as they are subject to certain conflicts *inter se*. We then find these memories exhibiting certain prevailing uniformities of sequence and coexistence among the things remembered; from these we derive our conception of a regular order of nature; and finally we reject as spurious any memory-content which conflicts with this order, and as doubtful any which our present memories of the fortunes of former rememberings render suspect. But the necessity for that initial postulation the pragmatist can as little escape as any other man who will take the trouble to reflect at all upon the logical grounds of his beliefs. (b) Mr. Dewey, however, seems to suppose that he has escaped it by his "account of knowledge involving past events"—which presumably refers again to the proposition that "the actual thing meant" in such knowledge is "prospective." But this proposition must, once more, be taken either in its literal and paradoxical, or in its qualified and truistic sense. In the former, it signifies that we never mean, and therefore never have as objects of our knowledge, any past events

whatever. Such a thesis is hardly favorable to the view that knowledge of the past is "logically verifiable." In the qualified sense, the proposition, as we have seen, means that we do actually know the past, with the aid of present memory-images and sense-data. But *how* the present existences constitute a true "logical verification" of past existences, the proposition does not explain. (c) Finally, Mr. Dewey tells us, in familiar pragmatistic language, that a belief about the past is "verified or condemned by its consequences." This, however, is another example of the error from which the pragmatist, of all men, should be most free—the confusion of the traits of one temporal phase of experience with those of another. When the consequences of a prior belief arrive, that belief is already "past and gone forever"; and how, at the later moment, we can—except by means of a faith in memory—know even that there *was* a prior belief of which these are the consequences, Mr. Dewey does nothing to make clear.

Considered as historical phenomena, most of the aspects of Professor Dewey's view about judgments of the past which I have here criticized seem to me to be simply manifestations of the working of the old leaven of epistemological idealism, and of the wrong sort of intellectualism, of which pragmatism has not yet purged itself—expressions of an obscure feeling that nothing ought to be treated as "known" which is not immediately given, actually present, totally verified on the spot. For the critical realist, on the contrary, all our knowledge (beyond bare sensory content) is a kind of foreign commerce, a trafficking with lands in which the traffickers do not live, but from which they may continually bring home good store of merchandise to enrich the here-and-now. And like all such traffic, it requires first of all a certain venture of belief, instinctive with most men, deliberate and self-conscious with those who reflect.

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DR. MCTAGGART AND CAUSALITY

MANY different persons compose the public, which thus contains a multitude of minds. Sociologists dispute with one another over the existence of a single public mind that combines this multitude into one. It is convenient to assume, for some purposes, this unitary combination of many individual minds, as any particular mind is composed of many thoughts. It is convenient when so many

members of the multitude think alike that one common mind seems to have one thought. There are such occasions and the public estimate of Dr. McTaggart's *The Nature of Existence* would very probably be one of them. Dr. McTaggart has himself supplied a sentence to express this public estimate. Most people, perhaps even including many professional philosophers, would only see in *The Nature of Existence* an elaborate and unnecessary amplification of the sentence on page 136 which reads: "But things which are unimportant are none the less real." The public adoption of this sentence to characterize the book would not adopt the motive which prompted it. Dr. McTaggart's sympathies center on the word "real," but the public emphasis would fall on the word "unimportant." The unanimous public mind would probably admit, without troubling to inquire further, the possible truth of Dr. McTaggart's opinions, and then decline to discuss them. The writer himself probably only expects to appeal to a few minds who will study the problem of existence without requiring an immediate connection with the interests of practical life. He does hope to derive some insight into questions of practical interest from his discussion of the general nature of the existent (p. 51), but he probably expects the public mind to prefer a more immediate study of the practical to such a long metaphysical detour.

The most practically minded person may feel the fascination of the principle stated on page 87: "when any substance changes, all substances must change." The pen of the astronomer, it has been said, as it records or calculates the motions of the planets, alters these motions by its own movements. The imperceptible effect on a giant planet of the insignificant pen appeals to imagination as a revelation of the sensitiveness of the universe to its most microscopic occurrences. It appeals also to the innate human desire to exert control by suggesting that the slightest human action spreads its influence through society. But the imaginative appeal of theoretically existent but imperceptible and irrelevant influences can not stay the vehement human hunt after effects more patent, more impressive and more palpably enduring. The susceptibilities of the universe of substances to the changes in one of them, as stated by Dr. McTaggart, have too little dramatic flavor to inspire a reformer. There is a suggestion of important possibilities if it is true that Brown's body changes when Smith, after being thinner than Brown, becomes fatter than he. If Smith can change Brown's body by a change in his own body perhaps he can affect Brown's political opinions by altering his own: a vista of entrancing possibility is promptly opened. Dr. McTaggart, however, is thinking of change

in a very practically unimportant sense, though it is very real. When Smith was thinner than Brown, Brown's body was related to Smith's body by being fatter. This relationship generated in Brown's body the quality of being fatter than Smith's. When Smith becomes the fatter of the two Brown's body alters its quality of being fatter than Smith's to the quality of being thinner. The ardent reformer might reflect, as he is faced with this illustration of universal interaction, on his stupidity in reading past page 7. "On the other hand," Dr. McTaggart there remarks in a footnote, "the possibility that it might be raining now, when in point of fact it is not raining, has no *practical* interest for me." The first seven pages should have shown to anybody, the reflecting reformer might well think, that the whole book was devoted to precisely such practically unimportant possibilities.

If the practically minded representative of the public reads paragraphs 30 to 33 he will probably think that the study of "the characteristics which belong to all that exists, or again, which belong to Existence as a whole" (p. 3) promotes peculiarity of thought as well as devotion to practically unimportant possibilities. Any two things, selected from the vast store of the universe, have, he learns, the same number of characteristics, and he may be too contemptuous of the proof to relish its deftness. A poker is hard and long and shining and, it may be supposed, to the north of London. An idea in a mind has corresponding qualities—but it has the quality of being not-hard, of being not-long, of being not-shining and is, presumably, not to the north of London. If the idea is vivid the poker has a corresponding quality of being not-vivid and so, by ascribing to everything every relation or quality, either positively or negatively, any single thing has precisely the same number of characteristics as any other. Since a shiny poker is not only more shining than an unpolished one but also has the quality of possessing a total group of qualities which, because it includes shininess, is different from the group of qualities possessed by the dull poker, since this development of qualities and relations could be indefinitely extended and since a similar unending development of qualities and relations could proceed from any one point of comparison between the poker and any other existent thing the poker has an infinity of characteristics—qualities and relations. The hypothetical single public mind, which can be conveniently substituted for many gasping individuals, will probably marvel at the peculiar preference of the metaphysician for researches which diffuse themselves over unimportant suppositions and very dubious speculations.

Our natural practical instincts incline us to a sharp distinction between mere mechanical aggregates, like a heap of stones, and

organic unities, like a plant or a tiger or a human society. When a handful of stones is removed from the heap it becomes smaller without appearing to be further sensitive to the change in its parts. The whole tiger is more sensitive to the removal of his tail and the loss of its chief sends an emotion through the whole of a human group. We think naturally of tigers and societies as "genuine wholes in which no part nor characteristic is indifferent to any other." A triangle, Professor Bosanquet adds to this definition of "a genuine whole," is imperfectly genuine in this sense because there is some indifference: its angles have the same sizes, however big or small it may be, if it keeps the same shape (*Implication and Linear Inference*, p. 7). For non-metaphysical wisdom the heap of stones is even less sensitive to its parts and less genuinely a whole than the triangle. If we accept hints from Dr. McTaggart we observe a greater sensitiveness in the heap to its parts. If it has as many stones as a neighboring heap before it loses a handful, it alters its quality of being equal to its neighbor to the quality of being less. It may become less than many other heaps which were previously larger than itself and each new relation involves a new quality in the heap. Dr. McTaggart would probably suggest to Professor Bosanquet that the angles of a large triangle do differ from the angles of a triangle which is smaller and has the same shape. The angles in the larger triangle are angles which have the quality of being related to a triangle which is larger than the smaller triangle, and the angles in the smaller triangle, since they are related to a triangle which is smaller than the larger triangle, have a different quality from the angles of the latter. If Dr. McTaggart is right then "all wholes are really organic unities" because "since the whole as a unity is what it is, the parts must be what they are" (*The Nature of Existence*, p. 161). These Hegelian refinements touch a sympathetic chord through the practical crust on our minds. Dr. McTaggart gets the whole universe into an organic unity which is sensitive to all changes in its parts. He seems to turn our ears to Blake as he says "For not one sparrow can suffer, and the whole universe not suffer also" (*Jerusalem*, Ch. 1, XXV, 8).

There is more appeal in Blake's sparrow than in Dr. McTaggart's more bloodless multitude of abstract qualities and relations. Dr. McTaggart realizes that suffering appeals more to our sense of life than does the cold recognition that the pain of a sparrow alters in a regardless passer-by the quality of being near a happy sparrow to the quality of being near a sparrow which suffers. He would doubtless insist on the equal reality of both forms of sensitiveness

in the universal whole without denying the greater importance for practical life of sympathy with suffering. He insists that our customary standards of value determine our customary division of things into biological organisms and beautiful objects, which are organic unities, and into more mechanical aggregates which are not. The decrease in size of a stony heap is only important for special purposes; slight changes in living or beautiful things produce differences which affect our sense of value (p. 161). His deduction from a survey of the less impressive, and apparently very unimportant, modes of sensitiveness in wholes to changes in their parts, that all wholes are organic unities, is a reminder of the disturbance which practical common sense notions may exert on the effort to understand the real nature of the universe.

This lesson may be drawn from *The Nature of Existence* if all else is rejected. The way of philosophical understanding opens out of the way of life because before becoming philosophers we must first live. But it is not merely its continuation. The impression of hopeless irrelevance first made upon our minds by *The Nature of Existence* is the response of men who spontaneously estimate everything by its direct bearing on their lives to a problem which includes them as items in a vaster, universal whole. The notions of relevance and irrelevance imposed upon us by the exigencies of life, which only demand from us knowledge adequate for our primary purposes, may have to give way before the wider demands of knowledge. We do not, in any ordinary relevant sense, alter objects by perceiving them. An apple retains the same shape, color or taste whether it is or is not being looked at. There are differences, however, between the perceived and the unperceived apple which are usually ignored because they are practically irrelevant. When *A* looks at the apple it is cognitively related to him and has the quality of being perceived. It sheds this relation and the quality generated from it when *A* turns away to look at something else. Its characteristics do not diminish, on Dr. McTaggart's doctrine, because it is now unperceived by *A* and has a corresponding negative quality. An exhibitor of pictures need not sharpen his apprehension of their qualities and relations by studying *The Nature of Existence*. Neither he nor his patrons will affect his paintings by merely looking at them in any way relevant to esthetic appreciation: their colors will not fade nor any other of their physical qualities be altered by simple inspection. It is less certain that the epistemologist can say dogmatically: "Knowing is never making. It is just knowing." (Laird, *A Study in Realism*, p. 35.) Since epistemology is wider than exhibiting pictures it may be its duty to

remember that a painting is never the same under inspection as it is in the dark. The contemplating mind appears to common sense to select its object from a world of being which is distinct from, and, in this sense, independent of itself (Alexander, *Space, Time and Deity*, i, 15). If the process of selection determines in the object the quality of being thus selected, the quality of being perceived and many other qualities determined by these two, the serenity of this conclusion is disturbed. The impression of hopeless irrelevance begins to pass into an impression of ultimate and philosophically significant relevancy. The geometer can often come down successfully upon a problem relating to lines and triangles in two dimensions by considering the analogous problem in three dimensions. Perhaps the abstract qualities and relations discussed by Dr. McTaggart may serve the philosopher as the higher dimension serves the geometer. He may be able to descend successfully from the study of the characters of all existents, or of existence as a whole, irrelevant and hopelessly abstract as they may at first appear, upon problems which have been discussed on the tacit assumption of their irrelevance.

By such a descent organic unities may cease to be regarded as intruders into an unorganized world. The epistemologist who supposes his perceived object to be unaffected by his perceptions may, by making his survey more comprehensive, discover more universal interaction than his theories contemplate. The past is not fixed if the coronation of Queen Victoria ceased to be the last British coronation in 1903. (*The Nature of Existence*, p. 87.) Will a persistent exploration of the ultimate characteristics which belong to existence or existents as a whole as such permit a successful descent upon the vexed question of causation? Will "cause" and "effect" obviously disappear or be obviously confirmed under Dr. McTaggart's dialectic? Dr. McTaggart has no doubts and firmly restores the concept of causality which has been dismissed by the anti-causationists of the day. The concept has been a little distorted, though not seriously dragged, during its passage into exile and back, but it does return.

Mr. Bertrand Russell has a favorite device for discrediting the causal relation. He delights in interrupting causal sequences by interventions: if a man is shot immediately after taking a fatal dose of arsenic the dose is deprived of its causal effect (*The Analysis of Mind*, p. 94). This compels a shortening of the time-interval between cause and effect to avoid the intrusion of such interventions which ultimately coalesces them into indistinguishableness. This cup-and-mouth argument strikes hard at the inevitableness of con-

nection which the causal relation implies. Science can get no nearer to the traditional causal law than to say, "A is usually followed by B" (p. 96). Mr. Russell selects favorable ground for this crusade against causality. "I put my penny in the slot, but before I can draw out my ticket there is an earthquake which upsets the machine and my calculations." Rigid determinations will be less discernible in complex phenomena and amid the stir and fuss of the varied world of events and things it is necessary that "to be sure of the expected effect we must know that there is nothing in the environment to interfere with it." They will be less discernible also because "as soon as we include the environment, the probability of repetition is diminished, until at last, when the whole environment is included, the probability of repetition becomes almost nil" (*Mysticism and Logic*, p. 187). Repetition is not necessary to rigid determinations, though, if it occurs, it assists in their recognition. Obviously, the examination of complex phenomena favors the application of the cup-and-mouth argument because rigid determinations will neither be prominent in repetitions nor lie nakedly in the complexities examined.

The differential equations which supersede spurious causal laws in advanced sciences (p. 194) conceal causality by summarization. Buckle was greatly impressed by the statistical constancies discovered by Queletet. He mentions, among others, the constant annual number of unaddressed letters (*History of Civilization in England*, i, 32). Supposing, to fix ideas, that for every 10,000 people in the British Isles one letter is posted every year without an address, the equation *unaddressed letters* \times 10,000 = *population* represents this statistical constancy. This simple equation, assuming it to be more stringently true than in reality, illustrates the mathematical ignoring of causes. The statistician anticipates the number of unaddressed letters during any year by dividing the number representing the population by 10,000. The mathematical result, as such, is independent of causes, but it is only possible because causes operate. There is a cause for the posting of each unaddressed letter: absence of mind in some instances, hurry in others and many more besides. The mathematical summary drops the causes out, but if they were not it would not be. The choice of the differential equation to confute the pro-causationists is even more effective than the choice of complicated phenomena to conceal causal connections. With the latter the cup-and-mouth argument is needed, but is effective because it is difficult to uncover connections in their nakedness. But it is not needed with the former because differential, or other, equations bury causal connections quite out of sight

in a summary. Bertrand Russell crusades very successfully on his chosen ground but will his conclusion that "The Law of Causality . . . like much that passes muster among philosophers, is a relic of a bygone age, surviving, like the monarchy, only because it is erroneously supposed to do no harm" (*Mysticism and Logic*, p. 180) survive a descent upon it from the ultimate characteristics of existents and existence?

Anything which has a quality must be related to that quality in that it possesses it. (*The Nature of Existence*, p. 112.) This change of ground supplies McTaggart with a route of descent into the rigid determinations which Russell so successfully conceals. He discovers the relation of *intrinsic determination* among the ultimate characteristics of existents. "If it is true that, whenever something has the quality *X*, something has the quality *Y*, this involves that, besides the relation between the two propositions 'something has the quality *X*,' and 'something has the quality *Y*,' there is relation between the qualities *X* and *Y*. I propose to call this relation Intrinsic Determination" (p. 111). If anything is blue it is spatial (p. 111); if a certain man is a husband, a certain woman must be a wife (p. 112); if anything stands in a relation it has the quality of being a term in that relation (p. 112). There are inevitable or rigid connections which are proof against all interventions and can not be summarized away in a formula or by a differential equation. Two qualities may intrinsically determine one another directly or they may determine one another more indirectly. "The two qualities of Snowdon, being a mountain and being *M* feet high, do extrinsically determine one another. For anything which had not the quality of being today *M* feet high would not be the substance which we call Snowdon" (p. 115). There is no intrinsic determination between being a mountain and being *M* feet high, as there is between being a mountain and spatiality, because a mountain may be any height above 1,000 feet. But since Snowdon is *M* feet high and is a mountain these two qualities are extrinsically co-determinate because of their connection with that particular mountain. "All qualities of a substance extrinsically determine one another" (p. 114): if a quality of a substance changes, its nature changes, and each other of its qualities becomes a member of a different group, though the difference may be slight, of qualities. "All existents are thus bound together in one system of extrinsic determination" (p. 151), but the relation of intrinsic determination bears more directly on causality. The discussion of the peculiar form of Intrinsic Determination which is defined by Dr. McTaggart as *determining correspondence* (p. 214) can be avoided in following the descent from Intrinsic Determination into causality.

The death of Charles I and his execution seem to preclude any intervention that could separate them or violate their Intrinsic Determination. The execution might have been prevented, and prevented even as the axe descended, but when his head was severed, Charles had to die. We are very close to a discovery of causal connections, for the execution of Charles would be ordinarily regarded as the cause of his death and as inevitably producing it. Fifty years hence, or earlier, surgery may intervene successfully between decapitation and death. This abstract possibility, which could not be disproved, saves the cup-and-mouth argument from defeat at this point: it is not easily defeated on its own ground. Meanwhile, a reasonable argument might run, in our particular part of the universe and pending a possible achievement of surgery: beheading determines death and the two are tied together as cause and effect.

Intervention between antecedent and subsequent is more obviously possible between drinking alcohol and intoxication. A draught of alcohol normally enough to result in drunkenness may leave a drinker who is abnormal or abnormally situated still sober. Determination can be approached more closely by reversing the order earlier-later to the order later-earlier and by taking the qualities more precisely (p. 238). Any man who is drunken with all the characteristics of alcoholic intoxication must have taken alcohol: alcoholic intoxication intrinsically determines drinking alcohol in sufficient quantity. This inversion of the direction of determination qualifies the ordinary conception of causation which contemplates only a forwards determination of effect by cause without a backwards determination of cause by effect. Causation becomes a particular instance of intrinsic determination where the terms are temporally distinguished—the cause being merely the earlier and the effect merely the later. The relative positions of the cause and effect in time alone distinguish causation from other instances of intrinsic determination (p. 227)—the cause exerts no activity on the effect (p. 224). Dr. McTaggart includes in the conception of causation its occurrence as a relation between qualities, since all intrinsic determination is between qualities, though these qualities include relational qualities (pp. 220–221), *i.e.*, qualities of substances which arise directly out of their relations. This version would probably not satisfy all pro-causationists—not Mercier who thought causes entered into permanent phenomena to disturb their tranquillity, as events (*On Causation with a Chapter on Belief*, Ch. 2), and not Lossky, for whom the idea of causal connection implies one event actively producing another (*The Intuitive Basis of*

Knowledge, Duddington's trans. p. 23). Dr. McTaggart also includes in the conception of cause the involvement of general laws (*The Nature of Existence*, p. 154).

Causality thus reduces to a temporal distinction in Intrinsic Determination. Dr. McTaggart's restoration of the concept of causality has obviously involved it in some critical reconstruction. A tie or necessary connection is left between cause and effect, but efficacy or agency is rejected.

Alexander, in one place, describes causation as "the continuous connection in sequence of two events within a substance" (*Space, Time and Deity*, ii, 153). This apparent acquiescence in the extraction of the effective element from the causal sequence is apparently contradicted by a recognition of "the influence of one thought in our minds over another" (ii, 152). He seems to avoid the introduction of efficacy into physical causation: physical causation is the continuous transition of one physical event into another (i, 97), and causality is a relation of continuity between two different motions (i, 279). When he adds that "our power is an instance of causality," that power or necessity is not contained in the conception of causality as a category and that "our awareness of power is but our consciousness of the causal relation between our will and our acts" (i, 291) he seems to acquiesce in the expulsion of efficaciousness from causation. "Self-initiation" results from the addition of "the consciousness of activity" to "simple causality" (ii, 154), minds and external things, as compresent, are in causal relation (ii, 155): he thus seems in sympathy with McTaggart's reduction of this much disputed category to a "... modest but pervasive category of causation" (i, 290), for McTaggart takes from the anti-causationist a modest remnant of the originally potent causal sequence, though he is less certain about its pervasiveness than Alexander—causality may not be universal (*The Nature of Existence*, p. 231).

The fortunes of the concept of causality may be compared to the fortunes of the notion that chemical elements may be a mixture of atoms with different atomic weights. The statistical method of enquiry imposed upon science for many years, obliging it to study reactions involving large groups of atoms, prevented the detection of the different atoms constituting these groups—of isotopes. Crookes thought he had found an element whose atoms differed in weight because he obtained different spectra from sifted groups of these atoms. His "meta-elements," however, were finally identified with real elements and elements again assumed their apparent atomic homogeneity. The more effective methods of analysis of the present

century have established the existence of substances with practically identical chemical and spectroscopic qualities but different atomic weights (Aston, *Isotopes*, Ch. 1). When causal sequences are grossly taken, the threads of causal or determinate connection are concealed. These connections were suspected and their possibility haunted the mind. But phenomena taken in the gross as causes and effects are liable to the interventions that the cup-and-mouth argument employs so effectively. Statistical resumés in mathematical formulæ still more effectively conceal these threads of determination that run through the complexities of the world.

By singling out, with more delicate analysis, the fundamental connections in the simple final characters of the world, Dr. McTaggart reveals Intrinsic Determination containing temporal distinctions. He reveals causal connections threading together the complexities of empirical existents. The bunches of causal connections, of temporally distinguishable Intrinsic Determinations, that represent the gross, complex causes and effects of empirical life, often have no rigid connection though they may present themselves in very uniform sequence. They are often sequent by the general permission of the universe—the business man regularly catching his morning train because the ground does not open to swallow him, and the human race continuing to exist because the atmosphere is not swept off into space. But the conviction implanted in the human mind by the reasonably trustworthy regularity in its experience seems to be justified, though by more ideal causal relations than the first causal relations it affirms. Gross rigid connections are less rigid than they first appear and many sequences are broken or understood to be breakable. None the less, the degree of regularity in the world, which is very great, seems to depend upon fundamental determinations which are often temporally connected or causal.

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BOOK REVIEWS

Senescence. G. STANLEY HALL. New York: D. Appleton and Co. 1922. Pp. xxvii + 518.

In this 500-page volume, with neither index nor bibliography, but with a well-analyzed table of contents, Dr. Hall gives a running account of "how the ignorant and learned, the child, the adult and the old, savage and civilized man, pagans and Christians, the ancient and the modern world, the representatives of various sciences,

and different individuals'' have viewed the latter half of life, ''letting each class speak for itself.'' This compendium of opinions, for the most part not critically synthesized, is interspersed with the author's own reflections, with experiences and autobiographical incidents, personal articles of faith, and with reverberations of several doctrines long associated with this writer,—the recapitulation theory, the infantilism of women, the rôle of unconscious and racial memories, and the utilization of fragmentary questionnaire returns.

Such a book is not easily reviewed, for it is in itself an organized series of reviews, under chapter headings. To begin with, such a book has long been needed, for the study of dotage has too long been limited to the literary and medical accounts of pathological cases. Presenting the various opinions, the dilemmas and the situations of senility as now on record serves to expose a lack of scientific data concerning age and ageing, and *Senescence* should serve as the beginning of a really scientific study of the latter half of life, its approaches, duration and terminal. The author constantly laments the non-existence of anything that could be called a science of gerontology.

Chapter I on ''The Youth of Old Age'' reviews the general drama of the latter half of life, the changes that come with senescence and precede senectitude. A series of ''typical cases'' is offered, which however, unfortunately for a science of old age, represent in the main well-marked clinical pictures of dementia. ''The History of Old Age'' in the second chapter reviews the data of longevity in plants and animals, treatment of the aged in savage, ancient, medieval and modern societies, and quotes many pictures of the nature and meaning of age. The ''Literature by and on the Aged,'' in Chapter III, relates in a hopeful vein the accomplishments of many old people and reports an assorted series of recipes for happy and efficient senility, ranging from leeches, astrology and cathartics to sleep, piety and eugenics. The authorities quoted range from Walt Mason to N. S. Shaler. Typical poems and quotations relating to age and death are given.

Chapter IV treats of ''Statistics of Old Age and Its Care'' and includes a study of mortality tables from the point of view of longevity and changes therein. These show increased average length of human life and both relative and absolute increase in the number of old people. The care of the aged, old-age insurance and pensions, problems and methods of retirement, are all considered. The importance of the conservation of age is stressed and ''a senescent league of national dimensions,'' with its own journal, suggested by a correspondent, is favored.

Under the heading "Medical Views and Treatment," summaries are given in Chapter V of many accounts of the causes and symptoms of decay, and of the physical basis of longevity. The view that longevity is chiefly dependent on heredity, though admittedly "doubtless correct in general," is depreciated because "it is fatalistic and tends to lessen the confidence" in the efficacy of medical administrations. Nor is this the only place in the book in which views are rejected because of their "psychological effect," in spite of the observational data on which they are based. The general conclusion, with respect to medicine, is that individual differences among the aged are much greater than is usually recognized, and that each must be in the main his own physician. Chapter VI, on "The Contributions of Biology and Physiology" reviews the work of Weismann, Hering, Semon (spelled Simon), Metchnikoff, Minot, Child, Loeb, Carrel, Steinach, Voronoff and others on such topics as heredity, growth, prolonging life, rejuvenation, artificial preservation of tissues, endocrinology, and gland transplantation. Much significance is attached to the contemporaneous exploitation of the sex glands and that of the unconscious erotic and it is suggested that in these related fields the cure of man's most grievous ills must be sought.

In Chapter VII questionnaire returns from "a few score of mostly eminent and some very distinguished people" are discussed. These are admittedly "far more suggestive than conclusive" although the selected replies tend more or less constantly to be generalized or taken as indications of "types." In the next chapter on "Some Conclusions" the author gives vent to his own reflections and views and describes many of his own experiences and experiments in growing old. The main themes are the physical and mental hygiene of age and a protest against the conventional attitudes toward the old. Sexual and marital problems, sleep, food, mood, emotional life, general mental and occupational adjustments, and the "Indian Summers" of the aged are considered. Especially emphasized is the preëminence of the old in religion, politics, philosophy, morals and as judges. It is this chapter that will most interest the general reader. In it, besides the readable accounts of the psychology of dotage, the author presents his personal views and advocates his main thesis, "which is that intelligent and well conserved senectitude has very important social and anthropological functions in the modern world not hitherto utilized or even recognized. The chief of these is most comprehensively designated by the general term, *synthesis*."

A final chapter reviews the literature and opinions on the psychology of death and the various forms and determinations of the hope for immortality or survival. Of special interest is the advocacy of Stekel's thesis that life is full of "thanatic symbolism" and that many of the details of poetry, folk-lore, myth, dreams and neuroses, ordinarily given a sexual significance by the Freudians, may be better treated as death symbols. "Thanatopsis" and "Crossing the Bar" appropriately close the volume.

Certainly but few topics or solutions have escaped the inquiring eye of Dr. Hall in this exploration of the literature of senility. The reviewer wishes that at least one adjustment that seems to him obviously to solve at once many problems both of infancy and of senility had been fully considered, or at least recognized. On the one hand, society is burdened by the prolongation of infancy and education. On the other, it faces an increase in the average span of life and in the number of the old. The former need some one to care for them, the latter something to care for. Could not social organization profit from the skipping of a generation in the program of care? How can the old better employ their preëminent judicial capacity and their power of synthesis than in the training of the young? If children were, by general expectation, the estate of their grandparents rather than the property of their fathers and mothers the active generation would be released from its chief handicap and the two problem-generations both provided with care and motivation compatible with their dignity. Dr. Hall makes much of "the eternal war between the young and the old" and asserts in the same chapter that in the aged "there is a new type of interest in young people and in children." It seems far from absurd to suggest that the skipping of a generation in the social program of care and responsibility might utilize this new interest in the resolution of that warfare, and at the same time afford society an added basis of stability.

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The Thirteen Principal Upanishads, translated from the Sanskrit, with an outline of the Upanishads and an annotated bibliography. ROBERT ERNEST HUME. Oxford University Press. 1921.

This is a book of which American scholarship has a right to be proud. With little fear of contradiction it may be called the first adequate English translation of the Upanishads. It is the result of many years' careful work and of a life-time of preparation. Himself born in India and brought up in its intellectual atmosphere,

familiar with the vernacular as well as with Sanskrit, intimate with Indian as well as with European scholars, at home in both Oriental and Occidental thought, Professor Hume was in an unusually favorable position for rendering the service which he has so painstakingly performed.

The book contains, in addition to the scholarly translation of the thirteen principal Upanishads in what is thought to be their chronological order, a seventy-page Outline of the philosophy of the writings translated, a discriminating bibliography, and a carefully made Sanskrit and general index. For the special student, the bibliography by itself would be of as much value as many an excellent book. It is a *selected, classified, and annotated* bibliography, giving not only the title and author, but also a brief account and evaluation of all the important translations of the Upanishads, of the chief editions of their texts, and of the more valuable linguistic and expository treatises concerning them.

The introductory Outline is an admirable piece of work, tracing the probable development of the Brahma concept into the first Indian pantheism, the parallel development of the Atman concept, the identification of the two, the rise of the distinction between phenomenon and noumenon as a result of the apparent conflict between the many and the one, and the reconciliation of the two in a form of Absolute Idealism. It is perhaps unfortunate that Professor Hume so often refers to this final synthesis as "Pantheism"—a name which surely should be reserved for a more realistic world view. It is questionable, moreover, whether Professor Hume's exposition of the ultimate nature of Brahma and of union with It really gets to the bottom of the thought of the Upanishads. I would at least suggest that the real meaning of these ancient thinkers was that this final union is not to be understood as "an unconscious condition," but rather as a hypothetically pure intuition, consciousness without an object,—comparable in some respects to Aristotle's *νόησις νοήσεως* (cf. *Bṛihad-Aranyaka*, IV, 3 and 5, *Kena*, 4-8). Of course this view has difficulties of its own, but it points a way out of some of the difficulties which Professor Hume seems to regard as insuperable.

As to the translation itself, too much praise can hardly be given to its conscientious scholarship and to the aids which it offers the student for understanding what the Upanishads actually say and probably mean. In this respect it is superior to both the other great translations, namely, Eucken's and Max Müller's. Eucken's is, of course, a much more inclusive work than Professor Hume's—as its title indicates, "Sechzig Upanishads des Veda"—and it is a

work of equal scholarship. In the opinion, however, of several Sanskrit scholars of eminence, it is not so close to the original as is Professor Hume's; and the occasional rendering of the verse portions of the text into doggerel detracts somewhat from its literary charm. Over Max Müller's English translation, Dr. Hume's work has even greater advantages. The older translation is considerably farther from the original and it is regularly impossible to distinguish within it what the Upanishads actually said and what Max Müller added. The shortcomings of Müller's version have long been recognized, and are, indeed, undeniable. Yet I can not refrain from saying one good word for his great book. Just because of the greater freedom with which he treated the text he was able to give full swing to his very great literary power, and the result was a translation which from the point of view of English was a work of art. The quiet eloquence of Max Müller's noble prose in many of the finer passages is quite unmatched in any other translation of the Upanishads with which I am acquainted. Like Gilbert Murray's renderings of the Greek dramatists, it takes many liberties with the original; but one may well question whether the general impression which the beginner takes away from both Murray and Müller is not more true to the original work as a whole than he would get from the more literal and scholarly translations. Personally, I am glad that it was Max Müller who introduced me to the Upanishads. I shall never forget the tremendous impression I got from my first reading of the Katha and the Brihad-Aranyaka, in his version, twenty-five years ago. If I had begun with either Eucken's or Professor Hume's more literal presentations I am not sure I should have received any such impression or should have taken away with me any such desire as I actually did to know more of these unique ancient writings. I do not think, therefore, that Max Müller's translation has as yet been fully replaced or ever will be. The student will still do well to begin with his translation and go on for his more exact study to Eucken and Hume.

In spite of the fact, however, that in the swing of its diction Professor Hume's translation is necessarily inferior to Max Müller's—necessarily so if it was to have the greater merit of literal rendering—it may well be called the first adequate English translation of the Upanishads. Professor Hume has made it possible for the student of Indian philosophy and religion who has no Sanskrit to see with a great deal of exactness what it is these ancient books contain. And it may be added that few books are more worthy of study for all who are interested in the human mind and human thought than these age-long guides to India's meditation. Professor

Hume has therefore done a work for which he should have the profound thanks of a host of readers.

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JOURNALS AND NEW BOOKS

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NOTES AND NEWS

The Joint Meeting of the Eastern and Western Divisions of the American Philosophical Association will be held at Union Theological Seminary, New York City, December 27, 28 and 29. Professor Dewey will deliver the Paul Carus Lectures, which will be four in number.

Dr. H. M. Halverson, of Clark University, has been appointed professor of psychology at the University of Maine.

Dr. Floyd H. Allport, of Harvard University, has been appointed associate professor of psychology at the University of North Carolina.

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TIME, MEANING AND TRANSCENDENCE

II. PROFESSOR DEWEY'S *Tertium Quid*

IT would appear from their title that the chief purpose of Professor Dewey's recent articles in this JOURNAL¹ is to vindicate a third variety of realism which is neither dualistic nor monistic. The considerations which seem to him to support this, however, are fully broached only in his second article, to which I now turn.

1. The first question which it would seem pertinent to ask is whether such a *tertium quid* is logically conceivable, *i.e.*, whether the two other species of realism do not exhaust the possibilities of the *genus*. Upon this question Mr. Dewey does not neglect to touch. He finds that—in consequence of a general “addiction to uncritical use of the principle of excluded middle”—I have too hastily assumed that “the disjunction between monistic and dualistic realism is exhaustive. There remains pluralistic realism. . . . The things which are taken as meaning or intending other things are infinitely diversified, and so are the things meant. Smoke stands for fire, an odor for a rose, different odors for different things, . . . and so on *ad infinitum*.”² This is much as if one should argue that the division of the class of finite whole numbers into odd and even is not exhaustive because “there remain also telephone numbers.” In other words, Mr. Dewey's “pluralistic” species of realism, as his illustrations show, is distinguished by means of a *fundamentum divisionis* different from that by which dualistic and monistic realism are distinguished. By the last-mentioned is meant the doctrine that in perception and thought the object known is always present immediately, without duplication or “representation,” in the cognitive experience; by dualistic realism is meant the doctrine which denies this universal direct presence of the thing known in the knowing, and declares that the object of knowledge

¹ “Realism without Monism or Dualism,” XIX, pp. 309-317; 351-361; here cited as *R. M. D.*

² *R. M. D.*, p. 356.

may be, and in at least some cases can be shown to be, existentially other than the content of knowledge. Since the essence of the second theory is the negation of the immediacy asserted by the first, the dichotomy is complete;³ no other realistic view is possible with respect to the matter to which the doctrines in question refer, namely, the universal identity or possible non-identity of object and content. Mr. Dewey's "pluralistic" class does not lie outside this two-fold division; it might be a sub-species of one of the classes mentioned. Certainly there is nothing in epistemological dualism which requires anyone to deny that "different odors stand for different things," or even that "the things which mean other things, and likewise the things meant, are infinitely diversified." "Dualistic realism" does *not*, as Mr. Dewey's antithesis would seem to imply, mean the theory that there are only two "things" in the universe.

And, in fact, it turns out that his own view is epistemologically dualistic, in one sense of the word "knowledge," and monistic if the word is used in another sense. "Wherever inference or reflection comes in," we are told—and Mr. Dewey would "not call anything knowledge in a logical or intellectual sense unless they do come in—there is, clearly, mediation of an object by some other entity which points to, signifies, or represents it." Here is an obvious dualism. But, he adds, "knowledge in the complete sense of the word" requires that "the object" shall be "'reached' eventually," that "the indication or signifying" be "borne out, verified, in something immediately present." Until this is accomplished, we have (in spite of the definition of a different kind of "knowledge" cited just above) only "a claim to knowledge," not knowledge itself. Here, then, since (apparently) the actual object known—though it gets its "cognitive status" from "a prior mediation"—is required to be "immediately experienced," we have an equally obvious epistemological monism. But this employment of the term "knowledge" in two senses does not show that the disjunction which Mr. Dewey challenges is not exhaustive. When he is using the term in any *one* sense, his account of knowledge falls on one

³ One might, of course, be a dualistic realist with respect to some *parts* of the field of supposed knowledge (*e.g.*, to the objects of thought) and monistic with respect to other parts (*e.g.*, the objects of perception). But the distinction of meaning (not of application) of the two theories remains unchanged—as does the irrelevancy of Mr. Dewey's remark about the "pluralistic" variety. In other words, with respect to any given known object, a realist must take either the monistic or the dualistic view; and the application of the dualistic to any object contradicts the universal proposition which defines the position usually understood by the term "monistic realism."

side or the other of the antithesis; and even with the aid of both senses, it never succeeds in offering us an example of any third way of knowing.

In the main, it is epistemological dualism that prevails in Mr. Dewey's paper. In the "knowledge" which constitutes most of our science, things are known—as he not merely concedes but insists—not by their direct presence at the moment of judgment about them, but through "surrogates." The geologist does not, after all, "immediately experience" extinct animals, even "eventually." But Mr. Dewey's essential contention is that such epistemological dualism does not imply a psycho-physical dualism. The "surrogates," he seeks to show, are not psychical entities, such as "ideas" or "mental states," but simply other objective "things."

2. To understand his reasons for this contention, it is necessary to examine his remarks about "meaning," which seem to me the most significant part of the second paper. "The problem of meaning," Mr. Strong has recently said, "is well adapted to take us to the roots of things."⁴ With this Mr. Dewey would apparently agree. "Meanings," he writes, "are the characteristic things in intellectual experience. They are the heart of every logical function." But his treatment of this all-important notion seems to me throughout ambiguous, sometimes inconsistent, and in great part irrelevant to the issues raised in my paper in *Essays in Critical Realism*, to which he is replying. Three distinct, though not by him clearly and steadily distinguished, senses of "meaning" are discoverable in his argument.

(a) In the more frequent and more definite passages on the subject, "meaning" signifies the relation or "function" of causal or other implication between facts or existents. One thing "means" another when its existence, or presence in experience, furnishes the ground for a valid inference to the existence or empirical occurrence of the other. Thus smoke "means" fire, an odor "means" a flower still to be smelled, the oscillation of the needle of a seismograph "means" a distant earthquake. In this sense, Mr. Dewey observes, meanings as well as things meant are objective; but they (meanings) are not physical, nor are they mental "in any psychical dualistic existential sense."⁵ Mr. Dewey is, indeed, willing to admit the word "mental" into the vocabulary of philosophy in this connection, but only in a new sense, namely, to designate *any* entity (e.g., a physical one) in so far as it is conceived as "exercising the function of being a surrogate of some absent thing." But this

⁴ *Mind*, January, 1922, p. 71.

⁵ *R. M. D.*, p. 358.

terminological concession does not imply that the object possesses meaning only by grace of the activity of some mind or knower; for we are told that "the relation, connection or mediation of one thing by another is," rather, "an essential feature of the *subject-matter* of knowledge."⁶ Or, as it is written in an earlier paper of Mr. Dewey's, "meanings are intrinsic; they have no instrumental or subservient office because they have no office at all. They are as much qualities of the objects in the situation as are red and black, hard and soft, square and round."⁷ It is, to be sure, difficult to see how this is to be reconciled with the repeated remark that it is only when physical things "become implicated in a reflective inquiry"—only when we "ask what they stand for or indicate" and "when it is asserted that they mean or support a certain conclusion"—that they "*acquire* a representative capacity which they *did not inherently possess*," or "exercise a representative function, though *not in (their) own existence representations*."⁸ However, it is fortunately not essential to my purpose to try to harmonize Mr. Dewey's utterances on this point.

What seems fairly clear is that, in the first sense of meaning, the thing which means and the thing meant are both physical objects; that the relation between them is not necessarily one of similarity; and that the "meaning" itself, is neither psychical nor physical, but a "neutral entity" or "essence."⁹

(b) But a footnote gives us a second definition of "meanings": "of course, upon my theory they are, existentially speaking, the operations involved in any situation having a cognitive reference."¹⁰ These "operations," I take it, are not essences, but definite temporal activities performed by cognitive agents or, if the expression is preferred, by intelligent animals; and we are elsewhere expressly told that they are physical.¹¹ No particular use, however, seems to be made of this definition in Mr. Dewey's present argument.

⁶ *R. M. D.*, p. 354; italics in original.

⁷ *Essays in Experimental Logic*, 1916, p. 17. The "situation" referred to is "the situation which follows upon reflection." If this signifies that, unless they had been reflected upon, the objects would not possess "meaning" at all, the sentence would suggest rather a subjectivistic conception of meaning. But the context of the passage seems to indicate that Mr. Dewey here is writing in his realistic rather than his idealistic or "immediate empiricist" vein.

⁸ *R. M. D.*, p. 352.

⁹ *R. M. D.*, p. 357. Of this surprising resort of a pragmatist to logical realism I shall speak further below.

¹⁰ *R. M. D.*, p. 358, n. 9.

¹¹ *E. L.*, p. 14.

Now if these two were the only sorts of "meaning" which Mr. Dewey recognized as pertinent to the experience called knowing, it is quite true that no argument for the presence of anything "psychical or mental as a term in the judging process" could be drawn from any premise admitted by him. For in the one case, two of the factors concerned (the thing which means and the thing meant) are described as objective physical things, while the third is apparently regarded as a real neutral or logical entity; while in the other case all three factors are described as physical. There is, however, unmistakably distinguishable at certain points in Mr. Dewey's reasoning a third kind of "meaning"; and it is this kind alone which is relevant to those conclusions of mine which Mr. Dewey controverts.

(c) This third sense appears in those passages in which Mr. Dewey recognizes that, whenever thought occurs, something must necessarily be "present-as-absent." This obviously will not fit into the first account of meaning. In that account we were told that "there is something indubitably present, say, smoke," and that it is *this* that means or represents the "something absent, say, fire." But, clearly, in the case supposed the smoke is not present-as-absent; it is just present, an immediate perceptual datum. It is rather, as Mr. Dewey himself goes on to note, the fire that "is presented as absent, as intended."¹² And if the fire is "presented," or made present, it is the presented fire—not, as in the first account, the smoke—that means or represents the absent fire. (There is, of course, an absent fire somehow concerned in the business, else no inference would be necessary.) And the relation between that which means and that which is meant is, in this sort of meaning, necessarily one of similarity, at least of pattern or relational schema. A fire obviously does not become "presented," or present-as-absent, solely by virtue of the presence in experience of something that is not a fire, and is not like a fire, and is in no sense absent. It is not smoke-characters but fire-characters that must be given, and yet referred to a not-present temporal or spatial *locus*, "in any situation having a cognitive reference" to a fire. But this, of course, is simply the ordinary dualistic conception of ideas or images which can "re-present" absent objects because they in some degree resemble or reproduce them. To some sort of presentative dualism, in short, Mr. Dewey is committed as soon as he acknowledges, with respect to the absent fire inferred from present smoke, that "*it is not a case of sheer absence, such as total*

¹² *R. M. D.*, p. 354.

ignorance would imply."¹³ At the moment when he wrote these words, Mr. Dewey must have had at least a transitory realization of the fact that to constitute a knowledge of an absent fire a present smoke is not enough; that the fire too must in some fashion be recognized as a part of the present content of the experience; and yet that, since the actual fire is truly absent, it can not, so to say, also be present *in propria persona*, but must be represented by a sort of deputy-fire, a true "surrogate."

What prevents Mr. Dewey from seeing the dualistic implications of this third sort of meaning is apparently a confusion of the type pointed out in my previous paper—a tendency to fluctuate between two or more senses of an ambiguous term or proposition, and to use arguments based upon the one sense to justify the rejection of unwelcome conclusions that would follow from the other. In the present instance he seems to treat the first and third senses of "meaning" as interchangeable; and since he is able to show that the first, as defined, has no objectionably dualistic consequences, he fails to see the consequences of the third. All that he has to say about the first is, in fact, irrelevant not merely to the particular issue which I had raised, but also to the cognitive experience in general. An "objective" or "intrinsic" reference of one physical thing to another is not the same as an apprehension of that reference. "A thing, *res*, actually present, smoke, rock" may to the top of its bent objectively mean "something else of the same order of existence as itself, a fire, or geologic animal"; but in doing so it presumably does not recreate, bring into temporal coëxistence with itself, extinct animals or dead fires. Such a meaning is *known*, however, only when there are simultaneously given in the field of awareness of a reflective organism both the "thing actually present," and the "presentation" of the something else which is not actually present, and which may at the moment of the experience be physically non-existent. A present rock is not, by itself, the thought of a deceased dinosaur, nor a smoke-cloud here the thought of a spent fire beyond the mountains.

3. Does, then, the epistemological dualism involved in the kind of "meaning" which is essential to cognition lead to psycho-physical dualism? The reasons which have seemed to me to require (of a realist) an affirmative answer to this question Mr. Dewey states briefly but not incorrectly: "Present-as-absent, or the presence of the absent, is an impossibility as regards any physical thing. Hence there is an admission of a psychical entity." For "psychical" in my usage means any indubitable content of experience

¹³ *R. M. D.*, p. 354.

which can not be assigned to the physical world as simultaneously constituted. To this argument, however, Mr. Dewey takes exception on the ground that it unwarrantably "assumes an exhaustive disjunction between the physical and psychical." My unhappy addiction to the principle of excluded middle has, it seems, again been my undoing; it has caused me to ignore "the growing number of persons who hold that certain entities are neutral to the distinction of psychical and physical," and to "assert by implication that all meanings, relations, activity systems, functions, affairs like mathematical entities, etc., . . . are psychical." Until I have "wrestled with the question of essence in its bearing upon the exhaustiveness of the disjunction between the physical and the psychical, and until many non-pragmatists are disposed of," Mr. Dewey feels entitled "to leave the matter here."

With respect to the principle of excluded middle I am afraid that I am a confirmed *habitué*; for I still find myself convinced of the exhaustiveness of the particular disjunction presupposed by the argument in question. Mr. Dewey's criticism of it is, to be plain, beside the mark in three respects:

(a) The "question of essences" has nothing to do with the universe of discourse with which my discussion was, and is, obviously concerned, *viz.*, the universe of particular concrete existents in time. Within that universe a logically exhaustive disjunction of the physical and the psychical can very well be made out—and that wholly without prejudice to the doctrine of the "neutrality" of purely logical entities. A given bit of empirical content present here and now in my consciousness, and possessing the attribute of extension, either is or is not assignable to the "public" spatial order of the physical sciences and to the system to which the equations of thermodynamics apply. And the sole issue with which my inquiry had to do was whether there are any such concrete particulars in experience, the characteristics of which forbid their allocation to the physical world. If there are such, their non-physical status does not prove that they are mere "essences." The argument, therefore, for their psychical character—in the sense defined—remains entirely unaffected by Mr. Dewey's Macedonian cry to the logical realists.

(b) Moreover, the particular class of things of which the psychical character was asserted was not, as Mr. Dewey seems to suppose, the class of "meanings," in the sense in which he here uses the term. So far as the present argument goes, a meaning may be as "neutral" as anyone may choose to think it—if it is simply a logical relation subsisting between two concrete things. In the

dualistic view, the psychical entity involved is primarily the thing which means—not the “meaning” nor, necessarily, the thing meant. It is, in other words, the idea that stands for an absent real object. It is the same entity to which Mr. Dewey ascribes the status of present-as-absent; and this, clearly, is not a mere essence.

(c) Finally, I should—before reading Mr. Dewey’s last paper—have thought it wholly redundant to discuss logical realism in an essay devoted specifically to an examination of the position of the pragmatists. For I had supposed that no doctrine could be more foreign to their position. Now, I confess, I am uncertain how Mr. Dewey really stands on this matter. Much of his language seems to suggest a belief in an independently existing realm of logical reals. But I take refuge again in an excluded middle! Either Professor Dewey is a logical realist or he is not. If he is, we shall all, assuredly, have to revise profoundly our conceptions of the meaning and doctrinal affinities of pragmatism; yet, as has been shown, the status of the particular question here under discussion would remain untouched. If he is not an adherent of that view, the introduction of it into the discussion would seem reminiscent of the well-known red herring. For there is not, I believe, any generally accepted rule of the etiquette of philosophical debate which requires that a critic, before examining the opinions which a given school of philosophers hold, shall first refute the opinions which they do not hold.

Since, to my great regret, I have not thus far in these papers been able to express a very large measure of agreement with Mr. Dewey, I shall take as the text for a summing-up a sentence of his which seems to me both true and truly “pragmatic.” “Imaginative recovery of the bygone,” he has written, “is indispensable to successful invasion of the future.”¹⁴ That embodies neatly in a single phrase four truths about our intertemporal cognition which underlie both man’s life of action and his life of feeling. Drawn out into full and formal statement, the propositions implicit in this pregnant sentence are these: (a) It is things actually “bygone” that man requires to know, if his adventure into the future is to be guided by intelligence. Hence it is a confounding of fundamental categories and a denial of an indispensable postulate of the practical intelligence, to speak of the “object” of such knowledge—the matters of fact concerning which it informs us—as exclusively “prospective,” or even as present. (b) Yet the bygone must in some way be “recovered,” i.e., brought into the field of present thought, if it is to serve as a guide for further inquiry or for future

¹⁴ *Creative Intelligence*, p. 14; already cited, *E. C. R.*, p. 53.

action. Its characters and their relations, or such of them as are pertinent to the contemplated "invasion of the future," must be actually before the agent here and now, to be reviewed and analyzed. (c) The recovery of these, however, is "imaginative," not literal or physical. As physical existents the bygone things remain forever irrecoverable. Memory does not raise the dead nor history rebuild Babylon. It is in some realm or order other than that of present physical objects that the recovered characters of the bygone have their present being—in the realm, namely, of "images." (d) Since the things which are the objects of our backward-looking knowledge *are* bygone and since some of them, at least, were when existent, physical, while the things in which we now believe ourselves able to read off their characters and relations are present and imaginal, these two classes of things can not be called existentially one. In any true inventory of the concrete particulars in the universe, they would constitute distinct items.

These four truths of common sense do not, of course, give us an exhaustive theory even of intertemporal knowledge. Yet they set one upon the way to it, and they embody the primary facts or necessary presuppositions to which any such theory, and any rational logic of practice, must conform. If, then, Professor Dewey will but reflect seriously upon the implications of this true saying of his own, he will, I can not but think, find reason for accepting all the conclusions which in his recent papers he has the air of denying: *viz.*, that we make judgments which truly "mean" the past and not merely the "prospective"; that consequently epistemological dualism—the doctrine that the present content of a cognitive experience and the absent object "meant" by that experience are two entities, not one—is unescapable; that the present content, if it is to function as a practically serviceable means of information about absent objects, must in some degree reproduce the characters or relation-patterns of those objects; that it is necessary to "admit the psychical or mental as a term in the judging process"; and that, since the present means of learning the characters of the past or other absent object is indirect, the general validity of that means can not be verified in immediate experience, but can only be postulated, as a thing necessary to be believed if we are, in the present, to employ intelligence for the shaping of the future.

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THE PREDICATE TERM

IN a former paper¹ I argued that, since the partial inverse of the *A* proposition is valid, the doctrine of the distribution of the predicate breaks down. The partial inverse, *Some non-S is not P*, contains a distributed term, *P*, which is undistributed in the proposition, *All S is P*, from which the partial inverse is derived. According to the advocates of the distribution of the predicate, when the *O* proposition is converted or the conclusion, *Some S is not P*, is drawn from the premises, *All M is P*, *Some S is not M*, the result is invalid; and the reason they assign for the invalidity of the converse and the conclusion is that the term in the predicate is distributed, whereas it is undistributed in the convertend and the major premise. My contention, in brief, is this: If that reason invalidates the converse or the conclusion, it must also invalidate the partial inverse of *A*; but it is admitted that it does not invalidate the partial inverse of *A*; therefore it does not invalidate the converse or the conclusion.

In an article which was recently published in this JOURNAL² Dr. Hammond discusses my paper, but he adduces no argument which in any way affects the justice of the foregoing contention. He occupies himself in showing by a process distinct from the ordinary one that the partial inverse of *A* is valid and that in this partial inverse *P* must be distributed with reference to *non-S*. Again, he says (p. 128): "The formal violation of the rule as to distribution is apparent in one case only. . . . The partial inverse of *A* is the only case in which an originally undistributed term reappears distributed." This is exactly what I maintained in my paper. I there said: "The partial inverse of the *A* proposition violates this rule [as to distribution] and yet it is valid." But then I continued: "I infer from this that the doctrine of the distribution of the predicate breaks down" (p. 322). Dr. Hammond does not himself draw this inference, but neither on the other hand does he advance any reason to show that it is unwarranted. I do not wish to misinterpret Dr. Hammond. It may be that by the word "apparent" in the passage I have quoted he means that the formal violation of the rule as to distribution is merely apparent and not real. If this is his meaning, he gives no proof that it is not real.

The following quotation contains a summary of his argument: "The assumption of the existence of the contradictory of the original predicate validates the partial inverse: not that we manufacture any premise therefrom, but that, if that contradictory exist, the term by

¹ This JOURNAL, Vol. XVIII, pp. 320-326.

² Vol. XIX, pp. 124-137.

its very nature will always be distributed with regard to it; and that obviously in the *A* proposition with which we start, if the contradictory of the predicate exist, then the subject must have a contradictory which in some part must coincide with the contradictory of the predicate; and with regard to that part the predicate will always be distributed. . . . The case, then, in the matter of the partial inverse is this. The explanation does not lie in any premise, but does lie in the assumption of the existence of the contradictory of the original predicate. For if that contradictory exist, then the predicate, being always distributed with regard to it, must also be distributed with regard to whatever portion of the contradictory of the original subject coincides with it; and somewhere within the same universe these two infinities must at least partially coincide. We have thus the right to say *Some not-S is not P*, since *P* must be distributed with regard to some portion of *not-S*" (p. 127).

This passage suggests the following remarks:

First: The utmost that is achieved by Dr. Hammond's argument is that *P* must be distributed with regard to *not-S*, and hence that we have a right to say *Some not-S is not P*. It does not touch, even remotely, the question whether there is not in the partial inverse a formal violation of the rule as to distribution. If Dr. Hammond's argument constitutes a separate proof of the validity of the partial inverse it also constitutes a separate proof of the correctness of my contention that the doctrine of the distribution of the predicate breaks down; for my contention is based upon the fact that the partial inverse of *A* is valid, that *P* must be distributed with regard to *non-S*.

Secondly: If in the case of any concrete *A* proposition inversion is impossible, this is never due to the fact that *P* is distributed in the partial inverse. The partial inverse of *A* is never invalid unless the full inverse, *Some non-S is non-P*, is invalid, and there is no distributed *P* in the full inverse. In fact, in the process of inverting *A* the full inverse is obtained before the partial inverse; and if the partial inverse is in any instance invalid, this is because it is validly derived from an invalid full inverse.

Thirdly: The partial inverse of *A* is much more fortunately circumstanced than the converse. It is an exceedingly rare occurrence to find an *A* proposition which can not be inverted; but the *A* propositions which can not be converted meet us at every turn. Even the example offered by Dr. Keynes as incapable of inversion, namely, *All human actions are foreseen by the Deity*, admits of a true and valid partial inverse. The Deity does not foresee Himself. Hence we are warranted in inferring *Something not a human action is not*

foreseen by the Deity. The example should have read *All human actions are known to the Deity.* Moreover, it is notorious how common are the *E* propositions which can not be converted or inverted. Consequently, any argument directed against the inversion of *A* on the score that some *A* propositions can not be inverted will tell with indefinitely greater force against the conversion of *A* and *E*. It should be observed in addition that, if a single invalid inverse be deemed sufficient to condemn the process of inversion, then conversion and obversion must also be condemned if in a single instance they issue in an invalid proposition. The only *A* propositions which can not be inverted are those in which the predicate is a term which extends to everything whatsoever—such as “entity” or one of its synonyms. This is the only kind of term that does not imply a contradictory from which it is distinct. All other terms have it as their very function to mark off their object from other objects.

Fourthly: Dr. Hammond says: “The assumption of the existence of the contradictory of the original predicate validates the partial inverse.” It is just as true to say: “The assumption of the existence of the original subject validates the converse of *A*.” These statements are equivalent to the following: “*All S is P* can not be inverted unless we assume *Some things are non-P*, and it can not be converted unless we assume *Some things are S*.” As they stand, both statements are open to serious misinterpretation. The accurate wording would be: “*All S is P* can not be inverted unless (we assume that) it *implies Some things are non-P*, and it can not be converted unless (we assume that) it *implies Some things are S*.” If *All S is P* does not imply *Some things are non-P*, the mere assumption that *Some things are non-P* will not help us to invert *All S is P*. Thus, the proposition, *Every tree is an entity*, does not imply *Some things are nonentities*, and therefore it can not be inverted, no matter what assumption be made. It should also be remarked that, if *A* and *E* be interpreted as implying the existence of their subject, the example we have just mentioned can not be contraposed; for “non-entity” would be the subject of both the partial and the full contrapositive.

It must be remembered that logic has to start with concrete examples. Without an initial knowledge of concrete examples symbols are unintelligible. We can only know that *Some P is S* is the converse of *All S is P* because this is true of the concrete examples with which we started. We know by experience that many *A* propositions imply the existence of their subject, and therefore they can be converted. We also know that nearly all *A* propositions imply the existence of the contradictory of their predicate, and therefore they

can be inverted. But we let *All S is P* stand for all universal affirmative propositions whatever, regardless of the question whether they can be converted or inverted. This has been the main factor in creating the problem of the existential import of propositions. Dr. Keynes has truly said: "Strictly speaking, a symbolic expression, such as *All S is P*, is to be regarded as a *propositional form*, rather than as a proposition *per se*. For it can not be described as in itself either true or false."³ Accordingly, logicians have been led to inquire how eduction and the doctrine of opposition would be affected when the terms of the various propositions were interpreted as implying now one thing, now another. But in practically every case the result of the discussion is determined by what the terms of the proposition are interpreted to *imply*, not by something which is assumed independently of the proposition. The following quotation from Dr. Keynes is pertinent to what has just been said. On pages 223 and 228 he deals with the propositions under the following supposition: "Let every proposition be understood to imply the existence of both its subject and its predicate and also of their contradictories." And then on page 228 he adds this footnote: "It would be quite a different problem if we were to assume the existence of *S* and *P* independently of the affirmation of the given proposition. A failure to distinguish between these problems is probably responsible for a good deal of the confusion and misunderstanding that has arisen in connection with the present discussion. But it is clearly one thing to say (a) 'All *S* is *P* and *S* is assumed to exist,' and another thing to say (b) 'All *S* is *P*,' meaning thereby '*S* exists and is always *P*.' In case (a) it is futile to go on to make the supposition that *S* is non-existent; in case (b), on the other hand, there is nothing to prevent our making the supposition, and we find that, if it holds good, the given proposition is false."

One further observation suggests itself in connection with the partial inverse of *A*. In my last paper I pointed out that the *O* proposition gives no information whatever, even by implication, about its predicate. This has a very vital bearing on the doctrine of the distribution of the predicate. The following question demands a distinct answer in the affirmative or the negative: Does a distributed predicate term give information about more individuals in the extension of the term than does an undistributed predicate term? If this question is answered in the affirmative, the partial inverse of *A* is invalid, in spite of whatever device we may employ to justify it; and if it is invalid, conversion and obversion are illicit processes. If the question is answered in the negative, then it is obviously in-

³ *Formal Logic*, 4th ed., p. 53.

adequate and misleading to pronounce a given conclusion in *O* invalid on the sole ground that its predicate is distributed. Why shouldn't it be distributed, if the mere fact of its being distributed conveys no information about it? If the conclusion in *O* is declared to be invalid on some other ground than the fact that the predicate is distributed, that is a different matter altogether. But is it not unusual for a work on logic to indicate any other reason when it sets about proving the rules of the categorical syllogism and determining the moods of the four figures? Consider the following argument: *All M is P, Some S is not M, therefore Some S is not P.* It must be remembered that all *A* propositions, with hardly an exception, imply *Some things are not P.* If this implication validates the partial inverse, *Some non-S is not P,* why does it not validate the conclusion, *Some S is not P?* It is plainly no answer to say that *P* is distributed in *Some S is not P.*

Dr. Hammond takes exception to an expression which occurred in my argument against the class mode of interpreting the categorical proposition. Since he does not expressly dispute the point I was there making, there might seem to be little use in discussing his objection. But his criticism tends to obscure the issue of my argument and therefore calls for a word of comment. His general theory as to the distributive and collective use of terms need not engage us here. He seems to hold that only collective terms can be used collectively. He says that in the proposition, *Any regiment is made up of soldiers,* "regiment" is used collectively and is distributed. I had thought that a term must be used distributively in order to be distributed. Since the predicate "made up of soldiers" is asserted of every regiment, that is, of all regiments taken one by one, I should think that the subject "regiment" is used distributively. In the proposition, *The American regiments won the victory,* I should say that "the American regiments" is used collectively, because the predicate "won the victory" is not asserted of the American regiments taken one by one. Take the propositions, *The pupils of the class are boys, The pupils of the class weigh three tons.* In the first proposition I should consider that "the pupils of the class" is used distributively and that the subject is distributed; in the second, that "the pupils of the class" is used collectively and that the subject is a singular term. But, as I said, there is no need to discuss Dr. Hammond's general theory. In my paper I had written: "In the proposition, *All the angles of a triangle are equal to two right angles,* no logician would speak of the subject term, 'angle of a triangle,' as either distributed or undistributed." Dr. Hammond says that the subject is not "angle of a triangle," but "all the angles of

a triangle." If the example be taken out of its context, there may be something to be said for Dr. Hammond's view; but considered in its context and in relation to the point it was intended to illustrate, there was a special appropriateness in speaking of "angle of a triangle" as the subject. I was arguing against the class mode of reading categorical propositions and I used this example to illustrate the incorrectness of reading the propositions in that way. On the class interpretation of propositions the subject in *All men are animals* stands for a class, that is, for a collection, and this collection is affirmed to be included in another collection. In spite of this, the subject is said to be "man," not "all men." And yet unless "all men" be taken together as a collection (*i.e.*, collectively), and not one by one (*i.e.*, distributively), the class mode of reading the proposition is not employed at all. The point I was endeavoring to make was this, that if the logician interpreted the subject and predicate of that proposition as classes, he had no more right to call "man" the distributed subject than he had to call "angle of a triangle" the distributed subject of *All the angles of a triangle are equal to two right angles*.

The point which has just been discussed suggests another remark. When the logician borrows a term from common language because its meaning renders it suitable to a given purpose, he should hesitate to employ it in such a way that its original meaning is lost. Dr. Hammond says: "If the term be singular, then in any assertion made of it it will be distributed, even though it have no extension in the sense of component species, since the assertion is taken as true of the only instance of the term there is" (p. 134). Now, of course, no fault can be found with Dr. Hammond personally for holding this opinion, since it is shared by others. But it is obvious that "distributed" has been emptied of all its original meaning when it is applied to a term which refers to a single object. It is as if we were to say, "The mother distributed the apple to her son," and then were to defend our use of the word "distributed" by the plea that that was the only apple the mother had. It is bad enough to speak of a singular proposition as "universal" without calling its subject "distributed." Over and above the inappropriateness of calling a singular proposition universal, there is this further disadvantage connected with it, that a pair of universal opposite propositions (*All S is P*, *No S is P*) may in a given instance be false together, but this is never the case with a pair of singular opposites (*This S is P*, *This S is not P*). The universal and the singular proposition have this in common, that their subject is definite, and thus they serve the purpose of securing identity of reference when employed along

with another proposition in a syllogism. Identity of reference is the main consideration in dealing with the premises of the categorical syllogism, and if a terminology could be invented which should set this forth simply and unambiguously and which should be universally applicable, it would be a distinct gain to logic. As it is, separate provision has commonly to be made for arguments like the following: *Most M is P, Most M is S, therefore Some S is P*. We may, however, construct *dicta* for the third figure which will cover every possible syllogism in that figure; thus: 1. *If [every M or] some M is both S and P, then some S is P*. 2. *If [every M or] some M is S and not P, then some S is not P*. "Every M" is enclosed in brackets because the *dicta* are really complete without it. The first *dictum* provides for the moods *Darapti*, *Disamis*, and *Datisi*; the second provides for *Felapton*, *Bocardo*, and *Ferison*; and the two together provide for every possible mood in the third figure, whatever be the sign of quantity which is employed. Moreover, they give us the three rules which are required to justify any combination of premises in the third figure, namely: 1. The subjects of the premises must overlap. 2. The minor premise must be affirmative. 3. The conclusion must be particular.

In the concluding paragraph of his article Dr. Hammond quotes me as follows: "The use of the doctrine of the distribution of the predicate involves a vicious circle. . . . The logician . . . first calls upon the student's knowledge of the implication of propositions to prove the doctrine, and then he bids the student call upon his knowledge of the doctrine in order to find out the implication." Dr. Hammond claims that this objection "involves final questions of the nature of logic." I do not understand how the objection can involve such questions unless the doctrine of the distribution of the predicate is so deeply imbedded in the substance of logical theory that there can not be a science of Logic without it. Surely no one would maintain that this doctrine is absolutely essential to Logic. But perhaps I have misunderstood the drift of Dr. Hammond's remark. The point is touched upon very briefly in his article; and it would be unprofitable to continue a discussion which, after all, may be based upon a misunderstanding.

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BEHAVIORISM AND THE PROGRAMME OF PHILOSOPHY

I

THE peculiar value of a behavioristic approach to the problem of knowledge is that it renders possible a definitely factual method of treatment. Knowledge, of course, consists of propositions or judgments. But judgments are not ultimate entities, and unless we are able to push back to the conditions under which they arise, our theory of knowledge can not be on a secure foundation. Judgments are essentially reactions, and they arise only in the context of highly developed organic life. Furthermore, the possession of meaning is the distinctive mark of judgment. Thus our problem may be formulated as follows: Under what conditions is it possible to have reactions which possess meaning? We may think of epistemology as dealing with the laws exhibited by such entities. In order to make this conception clearer, I shall go on to apply it to three fundamental questions, namely, the lower limit of judgment, the functioning of the universal in behavior, and the nature of truth.

First, then, let us consider the lower limit of judgment. Here we are face to face with the double requirement that every judgment shall be regarded as a reaction and that every judgment shall mean something or symbolize something. Now since every response *ex hypothesi* is occasioned by a stimulus it might appear that in a sense every response must be regarded as standing for or meaning something other than itself, *i.e.*, its stimulus. This, however, would be a serious confusion. If we are asking why such and such a judgment in fact comes to be made—that is, if we enquire as to its efficient cause—we must always trace it back to some specific, direct nexus of stimulus and response. But this causal relation of stimulus and response which must be present in the history of all judgments can not be treated as equivalent to the relation of the judgment to its denotation. A judgment may mean something in the future, or something non-existent, or it may be a universal or it may be false, and in such cases its denotation obviously can not be its cause.

Nevertheless we must still deal with the relation between judgment and denotation, between symbol and object, in terms of stimulus and response. When we say that a judgment stands for an object, we can only mean that it is the effective equivalent of that object in behavior. If the object itself were present as stimulus it would modify behavior in a determinate respect. We may say that a judgment symbolizes this object when its presence as stimulus in the absence, usually, of the object, modifies behavior in the same respect, as would the present object, within certain limits. I say

within certain limits because the effect of a symbol is likely to differ considerably, though in no merely arbitrary manner, from the effect of the object. It is one thing to read a sign to the effect that trespassers will be prosecuted, and a very different matter to be haled before the law.

Here, however, we have obtained a clue to the lower limit of judgment. Judgment, or the significant use of symbols, is possible only where reactions have become so refined and so highly individualized that they maintain an identity and possess an intrinsic interest which makes them serviceable as stimuli, quite apart from the stimuli which occasion them. When a dog digs frantically we must not say that he judges that there is a rabbit near by, for his reaction can not be dissociated from its occasioning cause. It possesses no special and separate interest and individuality of its own. But if a man says "There is a rabbit in that hole" we have a unique reaction which can be sharply and if necessary permanently distinguished from millions of others and so is eminently fitted to serve as a symbol or cue to specific action. Judgment, then, depends wholly on the capacity to produce reactions which can serve as symbols, reactions as distinctive, as varied, and as unmistakable as the innumerable physical objects for which they stand. Now this capacity presumably depends to some degree, perhaps to a very considerable degree, upon cerebral development. A dog with a human brain might conceivably invent a system of conventional signs, though with the canine organs of response these could hardly be very adequate. All this, however, is more or less speculative. What is quite certain is that the capacity to produce reactions well adapted for serving as judgments depends most importantly upon the action system. As John B. Watson points out, the vocal mechanism with all its exquisite delicacy is a very distinctive organ of human intelligence and most, if not all thinking can actually be reduced to laryngeal work. The reasonable conclusion seems to be that given the world of organic life as we actually know it, only those individuals physically equipped for true speech can make judgments or possess knowledge in the proper sense of the word. It should be noted that this does not rule out gestures, such as pointing in reply to a question, from the category of judgments. But I would maintain that such bodily movements only acquire the force of conventional symbols, that is, judgments in beings already schooled to the use of language reactions proper. Language behavior alone seems to possess the subtlety and be capable of the uniqueness to be the adequate instrument of a symbolism.

I turn now to the second problem mentioned above, that of the functioning of the universal. We have already seen that when a symbol occurs as stimulus it may modify behavior less dramatically than would the presence of the object for which it stands. Sometimes, to be sure, this is not the case. If I hear a sudden shout of "There's an automobile behind you!" my reaction is likely to be just as decisive as if I had seen it. If, however, some one tells me that ultimately I shall die I do not immediately take tearful farewells of all my friends, deliver myself of deathbed sentiments, and generally act as though *in articulo mortis*. The furthest I am likely to go is into a fit of philosophic pessimism and a resolve to make my will. Once more, if I am told that the returned soldiers ought to be taken care of in the reconstruction, my response is likely to be no more than a somewhat vague assent unless it is my misfortune to be a politician and liable to be confronted with large bodies of angry veterans at short notice.

Now the essential difference between these three cases is that they exhibit progressively increasing generalization. The relation of symbol and object in the first instance is simple. The sight of the oncoming automobile inspires the saving shout, and it is this immediate relationship which makes the shout so very effective a symbol for the vehicle. In the other two instances the nexus between symbol and object is much more complicated. Here the judgments are the results of long and highly elaborate social experience, that is, many people have been concerned in making them. Thus the peculiar value of language reactions is that they enable us to take advantage of wide areas of experience, and furthermore to adjust ourselves more wisely though less dramatically to a more inclusive environment than would otherwise be possible. Events remote in time and place play an effective part in life, and we are able to adjust ourselves adequately to distant facts and to benefit by abstractions and analyses of indefinite complexity. Hence the theory of universals as envisaged in behavioristic terms must show first how universal assertions actually build up as responses to stimulation, and second how they function in connecting present behavior with remote or unapproachable facts.

Elsewhere I have dealt with the truth problem from this point of view.¹ What we obtain is in effect a correspondence theory of truth, but we are able to avoid the central difficulty of the traditional correspondence theory since our concept of the behavior mechanism provides us with an agency which links up judgments with their

¹"Truth as Correspondence: a Re-definition," this JOURNAL, Vol. XIX, No. 7.

objects. If we ask why a judgment stands for a certain object, our reply will be that somewhere or under some conditions judgment and object are related as response and stimulus. If we try to confine ourselves to propositions or objectives by themselves, and systematically refuse to treat them as elements in actual causal sequences, the above question can not be answered, and consequently the whole account of truth in terms of correspondence has to be given up.

II

Much more briefly I will now try to suggest how a philosophy operating with behavioristic concepts can approach the problems of conduct. Here we find ourselves committed to what in effect is nothing less than an ethic of self-realization. Given a complex and subtle behavior mechanism, which is surely an individual in the fullest sense of the term, the obviously fundamental problem of life is to set up and maintain conditions propitious for its most effective working. On the negative side, this means that we must strive to build up habit structures in the individual such that functional conflicts with their accompanying suppressions and distortions either do not occur or are reduced to a minimum. That such suppressions and distortions may easily occur and may work infinite harm is impressively shown by Freudian psychology and the literature of psychoanalysis generally. Since functional conflict most characteristically arises between habit structures which are allowed to develop in the individual and the conventional demands of society, we may look for a theory of harmonious relations between individual and society in terms of the general concept of sublimation. An interesting point here is the status of genius. Creative genius usually amounts to a violent but only partially successful effort at complete sublimation. For the genius himself, then, his gift, apart from any collateral rewards it may bring in the form of reputation or money, is more or less a misfortune, as implying a disharmony and so a departure from the ideal of the good and happy life. For society his gift is likely to be of vast value in that it tends to improve the social medium and thus make successful adjustments easier for others. Then, on the positive side, our world-view demands that we look for such a development of the individual as will adjust his desires and needs so that all of them can come to maximum satisfaction. To sum up the whole matter, we begin with the concept of concrete personality, which is precisely what the behavior mechanism amounts to, and our theory of life naturally requires the conservation and development of personality to the highest possible degree of effectiveness.

Evidently such a program will result in one thing only, a philosophy in the legitimate and historical sense of the word. Our method, to be sure, will be that of science—that is to say, logical analysis—but only because this is the only possible mode of discursive thought. And our terms will all be ponderable entities with which science can and does deal. But our questions will not be those of any science. We ask how knowledge is possible and what are the norms of the good life. And our replies will be worked out in terms of actual fact, in terms of knowledge as it actually arises and life as it is actually lived.

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BOOK REVIEWS

The Meeting of Extremes in Contemporary Philosophy. BERNARD BOSANQUET. Macmillan. 1921. Pp. xxviii + 220.

Dr. Bosanquet's volume, in spite of its comparative brevity, is unusually comprehensive and suggestive; first because his survey of the current conflicting types of thought bears the stamp of his exceptionally wide knowledge and clear insight, and further on account of the highly interesting developments which, in his opinion, must mark the future. "You are no longer taking a single bearing with a single compass, but covering a whole region with a systematic survey" (p. ix). This interest centers—as may be inferred from his title—in something approaching paradox. For his analysis of the present situation is directed to show that the opposed schools whose vigorous polemics animate modern speculation share so much in common that they really are—often unconsciously—allies rather than antagonists, and the explicit principles which mark their divergence have implicit consequences which logically lead to a convergence that is still more fundamental; and thus the perspectives of philosophy are completely transformed. This result springs mainly from the rapidly changing character of philosophic discussion; it is becoming subtler, more refined, and the old "bombardment at long ranges" has given place to "sapping and mining" (p. vii). Whither this concealed activity leads and where the next explosion will occur thus constitute fascinating problems. I venture to add that in my opinion Dr. Bosanquet's own position on several fundamental points seems to be more clearly expressed than in his earlier volumes—with regard to sense-data, the relation between existence and thought, and between philosophy and religion; but this again is merely the more explicit formulation of what has always been implicit in the author's idealism.

This ground of agreement, however, is to be found not in mere devotion to truth or sincerity of conviction. The trenehaney of the "extremes" is well illustrated by the ease which first attracted the author's notice—"the startling difference and agreement" between Italian neo-idealism, and the neo-realism of Professor Drake and his collaborators, together with Dr. Alexander (p. viii); between the system for which "reality is thinking," and "being" or "mind" are "mutually contradictory terms," and that which asserts the non-mental nature of reality.¹ It would be unfair to summarize Dr. Bosanquet's treatment of the basis wherein he finds the identity of these antithetical standpoints; it must suffice to draw attention to the degree of their divergence as one indication of the fresh interest which his analysis gives to the issues involved; I shall refer to an equally striking instance later.

The readers of this JOURNAL will probably be mainly concerned with the attitude taken up by the writer, as representing an old and established type of idealism which has in recent decades aroused a good deal of vigorous criticism, towards American neo-realism. I ventured recently to express the opinion that nothing "prevents realism from taking its place within a system of absolute idealism";² and it appears to me that this suggestion finds much to support it in Dr. Bosanquet's volume. He accords the fullest recognition to the value of the arguments advanced by the realists. "Speculative philosophy welcomes the assertion that the world of sense-perception has being in its own right. . . . Hegel's and Green's position is that a chair is a chair right enough. . . . The speculative philosopher recognizes as a comrade the neo-realist who demands a place for all that sense-perception has to give us" (pp. 2, 5, 7).³ I think all realists will agree that this, in connection with the detailed discussion of the relation between thought and existence in Chap. IV, is sufficiently definite; it detracts, further, very much from the weight of the adverse criticism to which I have just alluded, which has always seemed to me completely to ignore the true absolutist standpoint towards these problems. Dr. Bosanquet, of course, proceeds to indicate the difficulties which realism has to face; these may be best summed up in his statement that "sensa may exist *per se*, but we can not get them so" (p. 13), and in the conclusions which he draws from this; but these will doubtless re-

¹ Gentile, *Theory of Mind as Pure Act*, pp. 56, 19. Drake, *Essays in Critical Realism*.

² This JOURNAL, March 16, 1922, p. 157.

³ Cf. p. 75; "the neo-realist . . . building the foundations of that speculative philosophy whose super-structure already exists . . . they enrich and amend it."

ceive due attention from the writers most directly concerned; and not the least interesting of their comments will surely be their reaction to the alliance which Dr. Bosanquet discerns between the critical school and Mr. Bradley in "the parallel movement between absolutism" and critical realism, and the analogy which persists even beyond "the point at which, *primâ facie*, they sharply diverge" (pp. 127-130). The divergent principles are, naturally, repudiated—the critical realist "analysis is a fundamental error" (p. 137); and I may be permitted to express my pleasure in finding that Dr. Bosanquet regards the complete critical theory as involving a noumenalism akin to Kant's—a position that I have myself attempted to substantiate.⁴ Thus the tangle of "isms" presents yet another "meeting of extremes"—in this instance a "common error, the confusion of transcendence of experience and transcendence of immediacy," characteristic equally of American critical realism and Italian neo-idealism (p. 149).

Next in degree of interest is the author's brief discussion of the philosophical bearings of the relativity theory; here again I am glad to find that, in his opinion, "the moral of relativity is not the permeation of the universe by mind or minds" (p. 16). This conclusion, or one closely analogous to it, has undoubtedly unduly imposed itself upon current philosophic thought, and been adopted as a fresh basis, if not indeed the final proof, of various modes of subjectivism. Such inferences, in my opinion, are altogether groundless, and Dr. Bosanquet's analysis of the subject may be recommended to the many who desire to apprehend the real value of this latest Copernican transformation in scientific theories. The philosophical aspects of the problem center in the nature of space-time. Dr. Bosanquet emphasizes the importance of the relation between "our primitive sense of time" and "uniform time," and concludes that "the spatio-temporal universe (has) no single space-time of its own" (pp. 152-154). Whether this is true or not appears to me to depend on the distinction between the scientific concept of the (physical) universe, and the absolutist (or idealist) conception of the Whole. The first seems to demand a universal, common, basal space-time of which the varying "relativity" systems are all subsidiary aspects depending upon their relevant physical conditions; or as Lord Haldane has expressed this, "change in standpoint gives

⁴ "It is futile to maintain that [the object of thought] is not a *Ding-an-sich*" (p. 146). Cf. *The Monist*, July, 1922; "The Failure of Critical Realism."

⁵ *The Reign of Relativity*, p. 402. I may refer to a fuller discussion of the subject in *Mind*, Jan., 1922, p. 40.

no change in the actual.”⁵ If, on the other hand, we advance to the profounder philosophical distinction “between time in the Absolute and the Absolute in time,”⁶ then it becomes possible to accept Dr. Bosanquet’s suggestion of the space-time-lessness of the Whole.⁷

The nature of time, further, presents us with what is perhaps the most striking of all “extremes”—the connection between time itself and the widest aspects of ethics and religion. For time is an element in all evolution or development; and hence arises “the ultimate crux of speculation; the place of time, progress, and change in the universe” (p. 125). In facing these issues, argues Dr. Bosanquet, modern philosophy stands at a parting of the ways. “The sentiment of religion,” to begin with, “begins in its own right, though it has an intimate relation, but one never passing into identity, with morality”; this position provides a common basis for “Alexander the realist, James the radical empiricist, and Bradley the absolutist” (pp. 68, 69). Once more, “our two extremes, creative thought (Gentile) and creative time (Alexander), meet in the demand that true being must engage in progress” (p. 158). The general standpoint of Italian neo-idealism is subjected to a searching criticism which goes (in my opinion) to the root of the vital issues involved. “Sociality, religion, metaphysic, are forms for which the system can find no place” (p. 163); but these demand, in their own inherent nature without being whittled away or transformed, full recognition in any philosophy that merits the name; they call therefore for “an element of stability as well as an element of alteration.” As to where this stability is to be found, the author’s own position is perfectly definite, although its difficulty, until it is fully developed, gives it a superficial quality of paradox. “The whole—the universe—all that in any sense is—can not change. All that is includes all that can be.” Thus we have, at first sight, both the “block universe” of James,⁸ and the *tout est donné* of Bergson; but for Dr. Bosanquet’s counter-arguments to these all too hasty impeachments of absolutism I must refer readers to his own volume, restricting myself to their bearing on the crucial dichotomy between religion and morality. We must distinguish, to begin with, “between a movement within, and a movement or change of, the all, of the ultimate foundation of being as such”;⁹ and this distinction

⁵ *Meeting of Extremes*, p. 126.

⁷ Cf. Green, *Proleg. to Ethics*, p. 57; “neither in time nor in space, immaterial and immovable, eternally one with itself.”

⁸ “The radical misapprehension of English idealism which appears to prevail in recent American writers” inherited from Royce and James (p. 198).

⁹ Pp. 177, 179, 182.

then involves the essential inadequacy of mere moralism, despite the high value of its principles and aspirations so far as these carry us. "Man's perfectibility as realized in the unending series of events is an obvious contradiction." In fundamental contrast with all types of such ethicisms Dr. Bosanquet upholds "a unity in which the finite spirit is at peace, and raised above the moralistic contradiction, in faith by the religious attitude and in speculation by philosophy"; and the most fitting conclusion to my inadequate attempt to present the essence of a rich and profound philosophy is provided by the author's insistence upon "a total perfection, which to approach and apprehend through the finite and its essential nexus with the infinite is the touchstone for a man, for life, and for philosophy."¹⁰ It is to be hoped that his book will further the better appreciation of an idealism that has too long been misrepresented and misunderstood.

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Platonism. PAUL ELMER MORE. Princeton University Press. 1917. Pp. ix + 307.

The Religion of Plato. PAUL ELMER MORE. Princeton University Press. 1921. Pp. xii + 352.

These volumes are announced as the first two of a work having to do with the beginnings and early environment of Christianity. The earlier one is introductory to the other four (three of them being not yet prepared), and of the second, the subject is "the religion of Plato as part of the great spiritual adventure of the ancient world from the death of Socrates to the council of Chalcedon just eight centuries and a half later." These two volumes are not intended to be works in history, and one infers the whole work when completed will not be primarily an historical one. The introductory volume is called by its author rather an invitation to philosophy and to the kind of philosophy that he takes Platonism to be.

The two volumes are naturally controlled, to a great extent, by the subject matter they approach. The philosophy they invite us to practise is austere and elevated, a system of reflections that is evoked by what Mr. More calls dualism and by which he means, I think, any two elements or forces that clash, each one seeking to dominate the other. The most significant of these, and the one to which Plato gave its classical formulation, is the one that includes pleasures as a sequence of states and happiness, the fruit of an enduring organism. Plato's discussion of this dualism in the *Republic* is the heart and center of Platonic wisdom.

¹⁰ Pp. 187, 200, 213.

A review of these two volumes in any adequate detail would require a considerable essay, in spite of the fact that so much is left out that is contained in the dialogues themselves, as Mr. More confesses with regret. A many-sided thinker like Plato is bound to make different impressions on different readers. It seems to the present reviewer that Mr. More sees Plato too much with the eyes of a Christian Platonist, but what he sees is very interesting and many things are admirably said, for instance this about the ideas: "These imaginative projections of the facts of the moral consciousness are the true Platonic ideas."

Mr. More is not a radical or a "progressive" where essentials are concerned, and the great essential is to control the dualism that so often disrupts a human character. His conviction is, he says, that behind such movements as the English revival of philosophic religion in the seventeenth century and the rise of romanticism in the eighteenth, "the strongest single influence has been the perilous spirit of liberation brought into the world by the disciple of Socrates, and that our mental and moral atmosphere, so to speak, is still permeated with inveterate perversions of Plato's doctrine." And this: "Only through the centralizing force of religious faith or through its equivalent in philosophy can the intellectual life regain its meaning and authority for earnest men."

Of the two volumes, the earlier one is, I think, much the more interesting. While perhaps nothing new is said, much is very well resaid, and it is what can be said many times and in many ways. Mr. More can make his own translations into English whenever he chooses to, and he has given his own translations at considerable length, particularly in the volume on religion. The volume on Platonism contains a study of the *Parmenides*, which ought to be a help to the understanding of that perplexing dialogue.

Mr. More takes his Plato very literally indeed. What is put into the mouth of Socrates must be accepted as Plato's opinion without qualification. Of Plato the artist, the poet, the dramatist, capable of humor and irony, there is hardly a suggestion. But then, the work thus far is really not so much about Plato as it is about the value of Platonism to a shell-shocked world.

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NOTES AND NEWS

At the recent meeting of the British Association at Hull, delegates from the University of Toronto extended a formal invitation to the Association to meet in Canada in 1924. They promised an enthusiastic welcome and \$50,000 toward defraying the expenses of British scientific colleagues. They requested, however, that the date of the Toronto meeting should be the second week of September, that excursions to the Pacific should be arranged beforehand, and also that any other meeting that year at home should be subsequent and strictly subsidiary, so that Toronto would have the real British Association meeting of 1924. The offer was unanimously and gratefully accepted.

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KNOWLEDGE AND SPEECH REACTION

A NEW conception that is thorough-going always simplifies. In fact it usually originates when a prevailing point of view has got overloaded, cumbrous and involved. The notion of behavior is already having a simplifying and reducing effect upon epistemology and in my opinion is only beginning its career. But a new point of view also tends to oversimplify, to neglect, ignore and thereby in effect to deny. It is one thing, for example, to deny qualities, meanings, feelings, consciousness, *etc.*, as they have been defined by prior theories, especially by modern psychology with its helplessly subjective and private metaphysics. It is another thing to deny the facts which common sense and common speech independently of any theory call by these names. Personally, I believe that the identification of knowing and thinking with speech is wholly in the right direction. But, with one marked exception, I have not seen any analysis of speech which appears adequate or which does not lay itself open to the charge of omitting and virtually denying obvious facts.¹

1. When it is asserted that speech as thought is a reaction, the question at once arises: What is its stimulus? The easy and simple reply is wrong. We are likely to say that speech is a reaction to a thing sensibly present, that, for example, I say "this is a knife" because a knife is sensibly present as a stimulus to speech. The behaviorist, of all persons, can not afford to give this account of the stimulus to speech. For if he does, he subjects himself to a final retort. The sensible presence of the knife is, then, already a case of knowledge, and speech instead of constituting knowledge merely voices, utters or reduplicates a knowledge already there in full existence. If the stimulus is not a thing sensibly present, neither is it merely some prior complete act or piece of behavior which causes contractions in the vocal organs. The utterances of a talking-machine

¹ The exception is the remarkably clear and comprehensive paper by Mead, in this JOURNAL, Vol. XIX, No. 6, on "A Behavioristic Account of the Significant Symbol."

are induced by an internal mechanism but they are not speech or knowledge; neither is a hiccough or groan or sigh, although it is caused in the vocal musculature by prior organic conditions.

There is a difference between the concept of stimulus-reaction and that of cause-effect. The former includes, of course, the latter, but it adds something. It has, in addition, the property of an adaptation, or maladaptation, which is effected. But adaptation alone is not enough to differentiate stimulus and response in the case of speech. A sigh may relieve suffering and in so far be adaptive. Seeing as an act may be part of the stimulus to saying "that is a knife," but it can not be the entire stimulus. For seeing as a complete stimulus gives rise to the response of reaching and taking or withdrawing, not of speech. What has to be accounted for is the postponement of the complete overt reaction, and its conversion into an intermediate vocal reaction. There must be some break in the seeing-reaching sequence, some obstacle to its occurrence, to induce a diversion from the hand to the voice. There must be a defective or hesitant connection between seeing and handling which is somehow made good and whole by speech. Hence the stimulus to speech can not be identified, *per simpliciter*, with its object. The latter is its consequence, not its antecedent.

2. Before fully developing the implications of this point we must turn to another phase of speech reaction. Not every speech reaction, even when genuine and not a mere vocalization, is a cognitive statement even by implication. Story-telling need not purport to state "facts" or "truths"; its interest may be increased by *vraisemblance*, but this trait serves a dramatic or imaginative end, not an intellectual one. A reader of Shakespeare may become a student of the sources upon which Shakespeare drew, and make speech reactions to this study. Then the reaction is cognitive. But he need not do so; he may be content to confine his speech reaction to a dramatic production. Again the reader may become interested in whether Shakespeare meant to represent Hamlet as mad; then his reaction is a judgment. But he may be satisfied merely to use speech as a means of re-creating a Hamlet either sane or mad; as a mode of story-telling or drama it makes no difference. There is no outside criterion till we go outside of mere story-telling. The play's the thing and it has no object of knowledge.

These remarks are intended to call attention to the need of discovering some differential trait of those speech reactions which do constitute knowledge. A story or play is there, and the re-enacting of it in a speech mode is purely additive. It makes another piece of behavior, but this new mode of behavior does not react back into

the play or story or its conditions. It is complete on its own account. A play of Shakespeare may mean a hundred different things to a hundred different audiences or a hundred different persons in the same audience, and the diversity of the hundred speech reactions evoked is no matter. The speech reactions need have no connection with what Shakespeare himself meant in his reaction, beyond being caused by the latter. But a judgment or thought about what Shakespeare himself meant does not have any such self-sufficing independence. It has to link up with something outside itself. It has to be a reaction not merely to the play as a provocative cause, but has to be a response which somehow fits into or answers to the play as stimulus. Our problem is to name that distinctive feature of a speech reaction which confers upon it the quality of response, reply, answer; of supplying something lacking without it.

We thus return to our prior analysis. The statement "this is a knife" is cognitive because it is more than a mere evocation of a prior piece of behavior. It serves to supplement or complete a behavior which is incomplete or broken without it. As response it is reaction in another sense than when we say in physics: action and reaction are equal and in opposite direction. Some physical reactions are quite independent of that action to which they are reactions except in a casual sense. But a response in statement is intimately connected with that to which it answers. It is not merely to it or away from it, but is back *into* it: that is, it continues, develops, directs something defective without it. Without speech reaction the action which causes it is blind trial or error; with it, or rather through it, the evoking action becomes purposive, that is, continuous, cumulative. To be more specific the response "this is a knife" is produced by reactions of seeing and incipient reactions of reaching, touching, handling, which are up to the point of speech reaction fumbling, choked and conflicting. Speech reaction unifies them into the attitude of unhesitant readiness to seize and cut. It integrates or coordinates behavior tendencies which without it are uncertain and more or less antagonistic. This trait is the differentia of judgment from speech reaction in the form of story telling and vicarious dramatic reproduction. Unless we acknowledge and emphasize this trait, the behavioristic theory falls an easy victim to the contention that language merely echoes or puts into verbal form an apprehension that is complete without it. The dilemma is unescapable. Either the speech reaction does something to what calls it out, modifying it and giving it a behavior characteristic which it otherwise does not have, or it is mere utterance of what already exists apart from it.

This fact throws light upon the oversimplification referred to at the outset. It is easy to overlook the modifying, re-directive and

integrative function of speech as a response. Then only one side of it is recognized, that of its being *caused* by a prior action. The result is an identification of stimulus and object of knowledge which not merely goes contrary to facts but which undermines the behavioristic statement. For since the stimulus as cause is there when the reaction takes place, the object must also be there, if stimulus and object are simply identified. Then, cognitively speaking, speech is a futile echoing, however useful it may be as a practical device for fixing attention or supplying a convenient memorandum for recollection.

Mr. Mursell, in his recent interesting article,² seems to me to illustrate the oversimplification in question and also its consequences. Speaking of perceptual judgments—speech reactions which state perceptions—he says they are “those judgments where the stimulus of the speech reaction is that to which the judgment has reference. I see a colored patch and respond by saying ‘that is red.’ I see my desk light burning and the muscles of my vocal organs are innervated to make the assertion ‘the light is burning.’” So far the account is inconclusive with respect to our problem. No one would deny that speech reaction has reference to its stimulus or that an act of seeing is at least part of its stimulus. But the passage continues as follows: “In such cases the relation between the judgment and *its object* seems sufficiently clear. The object is the *cause* of the judgment, the causal nexus taking an intricate path through the nervous ganglia.” (Italics mine.) Here the nature of the reference is unambiguously stated. Stimulus is cause, and as cause it is also the object of judgment.

If the stimulus is not simply a tendency to see, that is, an innervation of the optical apparatus, but is a seeing of “desk-light-burning,” the non-behaviorist can adequately retort that seeing the light and the desk and their respective positions is already a case of knowing or judgment, so that speech is merely an addition, supernumerary for judgment though doubtless of practical and social utility. The case stands otherwise if the stimulus is an obstructed or incomplete act of vision, and speech serves to release, to direct and clinch it. In the latter case, the patch would *not* be known as red, say, or the light as the light of a lamp on the desk until the speech reaction definitely determined a stimulus. There is nothing paradoxical in this conception. We constantly react to light by using it, without knowing or naming it—without an explicit distinction and identification, and we very well know in dealing with novelties how names clear up and fix otherwise confusing and confused situations. Be-

² This JOURNAL, Vol. XIX, p. 187, “Truth as Correspondence.”

havioristically, above all, we must conceive that speech response is not something final and isolated, but that it operates in turn as condition of some more effective and adequate adjustment. While practically this function may be often performed in a direction *away* from its cause, as when we call out to a person in danger to look out, without stopping to tell him why he should look out, intellectually its office is turned *toward* the cause to modify it. And the *object of judgment* is thus not the cause simply; it is the consequence, the modification effected in its cause by the speech reaction. The speech response is retroactive as it were; not that it can modify anything which has passed out of existence, but it influences a contemporary act of vision and a tendency to reach or handle so as to give them a directed unity which they would not otherwise achieve save at the termination of a period of trial and error.

3. The analysis is still oversimplified. Speaking is connected with an ear and auditory apparatus, and their neuro-muscular and intra-organic connections. It is contrary to fact to identify a speech reaction with simply the innervation of the vocal organs. This gives no differentia of speech from a sigh, or grunt, or ejaculation due to respiratory reactions to pain. A speech reaction is the innervation-of-vocal-apparatus-as-stimulus-to-the-responses-of-other-organs-through-the-auditory-apparatus. It involves the auditor and his characteristic reaction to speech heard. Often and primarily the auditor is another organism whose behavior is required to complete the speech reaction, this behavior being the objective aimed at in the speech reaction.³

When the speech reaction consists in a "silent" innervation the principle is the same. It is then addressed to our own ear and the total connections thereof. Instead of making a command, or giving warning or advice to another agent for him to react to, we address it to ourself as a further re-agent. The agent issuing the stimulus and the one receiving it form two agents or persons or behavior systems. Failure expressly to note the implication of the auditor and his further behavior in a speech reaction is, I think, chiefly responsible for the common belief that there is something arbitrary, conceived in the interest of upholding a behavioristic theory at all cost, in identifying thought with speech. For when speech is confined to mere vocal innervations, the heart of knowledge is clearly not there. But neither is the heart of speech. Introduce connection with the responsive adjustments of the audience, and the forced paradox disappears. We have, as Mr. Mead has shown, the conditions for meaning.

³ This is the point which is brought out so effectively in the article by Mead already referred to.

A speech reaction is a direction to subsequent behavior: Look and see; listen and hear; jump, turn to the left—remarks addressed to another who is in connection with ourselves, a partaker in the same behavior system, and then to ourselves, as a further re-agent, when there is no other person present.

Commands, optatives and subjunctives are the primary modes of speech reaction; the indicative or expositive mood is an amplification. For example, even a treatise by a mathematician or chemist is a guide to the undertaking of certain behavior reactions—a series of acts which when executed will result in seeing the things which the author has responded to with certain statements. It follows that the *object* of a speech reaction is the concordant responses which it sets up. Antecedent stimuli are a part of this object but are not the complete object of knowledge; the latter involves the further determinations which antecedent stimuli undergo by means of behavior evoked by speech. The object of knowledge or speech is the ultimate *consent* of the coördinated responses of speaker and hearer; the object of affirmation is the confirmation of co-adapted behavior. Its object is that future complex coördination of serial acts into a single behavior-system which would not exist without it. One's responses are co-adapted to the auditor's and the auditor's to one's own. Certain consequences follow.

1. The first is the refutation of solipsism. Not only can two persons know the same object, but a single personal reaction *can not* know an identical object. As a single and singular being I may make a primary non-cognitive reaction to a stimulus. I may shiver when the ear is stimulated in a certain way. But when I say, "that is the noise of a saw" the statement is addressed to the responses of an auditor in such a way as to demand a concordant reaction. He listens and looks, and says, "no, that is the sound of an axle of a wheel." Then I have to look, to respond with further behavior. The speech reaction is not complete till a concordant response is established. In other words, speech is conversation; it involves a duality of experiences or views. A single presence or view does not constitute judgment or statement. This particular manner of putting the fact may be unusual but there is nothing strikingly novel in the conception. Cognition involves recognition, acknowledgment, a contrast and connection of two different times or places of experience by means of which a distinctive identification is set up. A single act can not, as singular, establish the identification required to characterize an event as an object. There must be recurrence in a slightly different context. This is a thing that requires a response like that made before, or which will exact a

like response in the future, or of some other re-agent in the present. And without the sameness or correspondence of the responses of the two times or places, there is literally, contra-diction. An object of knowledge must consistently cover or comprehend responses to at least two distinct stimuli.

2. This conclusion has a direct bearing upon the nature of the correspondence which defines truth. The correspondence is found in the inclusion in a single contemporary behavior system of diverse behavior reactions. No correspondence can be conclusively established between a present response and a past one in their separation, or between a present one and a future one in their separateness. There must be one harmonious behavior function which includes the elements of both. Mr. Mursell in the article referred to makes correspondence retroactive. He says:⁴ "When I assert that Cæsar crossed the Rubicon, I am reproducing the original reaction made by observers two thousand years ago, who saw him splash through the stream and found in the sight a stimulus to the response 'He has crossed the Rubicon.'" This account involves the mistake pointed out in the case of the statement "this is red color." It assumes that the object is known and also truly known prior to the speech reaction. How do I know that some former observer made the speech reaction ascribed to him? This ascription is the point at issue, and the account quoted merely begs the question. A correct statement of the data that Mr. Mursell recognizes would be: "I say that an observer two thousand years ago said that Cæsar has crossed the Rubicon; then I reproduce that saying on my own account. Then I say that the two sayings agree or correspond." Undoubtedly they do. But at no point have I got beyond my own sayings. The correspondence is merely between a saying of my own about what some one else said with another saying of my own. There is only a new kind of solipsism, that of private speech. In this historical case, I clearly can not direct my remark to a man long since dead and secure concordant behavior response from him. But I do address myself to others and say that if they will look at historic records, including those of a subsequent course of events, their responses will correspond to mine—or that the different reactions will all enter into a single complex behavior system.

Another illustration of Mr. Mursell's brings out the same points. He says: "Suppose I say Napoleon's tomb is in Paris. Let us assume that I read the words somewhere. Pushing back along the chain of recorded responses of which the printed symbols that I

⁴ P. 187.

saw are the last, I come finally to the place where the original observer, who started the whole series, stood. I am directed to a particular locus, and there I receive a stimulus that issues in the response, 'Yes, Napoleon's tomb is in Paris.' And this it is which constitutes the truth of the judgment. . . . The chain of recorded responses always directs us to some specific locus."⁵ The last statement must be unqualifiedly admitted. But what and where is the locus? If it is merely past—and not a stimulus-response continuing into the present—then I can only state that "I say that an original observer said that the tomb is in Paris." In short, as I push back along the chain, I finally come after all only to my own saying about what another said. If I go to Paris then indeed I come upon quite another saying which is congruous with my prior saying that the tomb is in Paris, but in this case the object is not one of a retroactive response. Or, I may respond without going to Paris in such a way as to call out reactions from other persons who make the same deliverance—that the tomb is in Paris. Here also the object is the attained co-adaptations in behavior.

Supposing we take a judgment about an event in the geological ages preceding the existence of human beings or any organisms possessed of speech reactions. In such instances, it is clear that there can be no question of correspondence with the speech reaction of a contemporary observer. By description the retroactive correspondence of sayings is ruled out. Yet no one doubts that there are some judgments about this ancient state of affairs which are truer than others. How can this be possible, since there can be no question of reproducing the judgment of an observer? If we say that what we now judge is what a contemporary observer would have said if he had been present, we are clearly begging the question. Nor could a contemporary observer have made as accurate and comprehensive a judgment in some respects as we can make, since we can also judge what occurred at a given period in the light of what happened afterwards. Clearly our speech reaction is to observations of present perceptions of data, rocks, fossils, *etc.* The other auditor and speaker to whom the statements are addressed are other possible observers of these and similar data. The ulterior "object" is the concordant, mutually reinforcing behavior system, including, of course, the speech responses. Seiousness in this, as in other cases, is con-seiousness. And this equating is not a mere figure of speech; it gives the original meaning of the word.

Summing up, we may say that there are three types of response which it is necessary to distinguish. First, there is direct organic response-of-the-autonomic-and-sensori-central-motor-systems-to

⁵ *Op. cit.*, p. 188.

stimuli. These stimuli are not, for and in the reaction, objects. Their connection with response is causal rather than cognitional. The reaction is physico-chemical, though it may terminate in a spatial or molar change. Neither the stimulus nor the response is an object of knowledge, though it may become part of an *object-to-be-known*. If the stimulus were adequate or complete, complete adaptative response or use would take place. Being incomplete, it is a challenge to a further response which will give it determinate character. Thereby the to-be-known becomes an object of knowledge; it becomes an answer instead of a query.

Secondly, the speech response occupies an intermediate position. By clinching, fixing its stimulus, it releases further modes of response. Saying that the colored patch is red enables us to take it as the thing we have been hunting for, or to react to it as a definite warning of danger. The prior activities form part of the subject-matter of the thing thus known. But they are *not* the object known. The object known is the coördination of the prior behavior with the consequent behavior which is effected by the medium of speech. Till the assumption is banished that stimulus to knowing and object of knowledge are the same thing, the analysis of knowledge and truth will be confused. Thirdly, the eventual coördination of behavior involves the response of a further re-agent, namely, the auditor, whether another organism or one's own. This coördination of the activity of speaker and hearer forms the ulterior object of knowledge. As a co-ordination or co-adaptation of at least two respondents, it constitutes that correspondence which we call knowledge or truth. Correspondence of past and present responses can be determined only by means of a further response which includes both of them within itself in a unified way. The theory explains the relation of truth to consistency as well as to correspondence. The different responses must consist, cohere, together. Consistency gets an objective, non-mentalistic meaning when it is understood to mean capacity for integration of different responses in a single more comprehensive behavior.

We may conclude by suggesting a possible explanation of the oversimplification of the behavioristic account of speech which has been pointed out. Introspective psychology of necessity broke up the subject-matter of psychology into a number of *dissecta membra*, of disjointed fragments treated as independent self-sufficing wholes. I say "of necessity" because the connecting links of these fragments are found in a context of environmental conditions and organic behavior of which the introspectionist can not be aware. Now behaviorism has too often confined itself to finding behavior-

istic counterparts of the same material and topics with which introspective psychology has dealt.⁶ Consequently actual and concrete behavior has been broken up into a number of disjointed pieces instead of being analyzed freely on its own account. Thus certain errors of introspective psychology have been reduplicated in the very behavioristic psychology which is a protest against introspectionism.

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PROFESSOR PERRY'S EMPIRICISM

THE present age may not unfairly be characterized as one intent upon immediate results. The remarkable achievements of the sciences, pure and applied, seemingly put the philosopher, the plodding student of ultimate principles, to shame, unless he, too, can produce for the edification of an insatiable public some new and novel contributions pointing directly to the advancement of the individual and social good. While psychologists are busy devising intelligence tests, or performing hypothetical experiments upon the human being, under the inspiration of "behaviorism," quite as if man were a lower species of animal, the philosopher must evidently do something to "save caste," at least by way of showing his interest in such scientific advances.

To the attempt to keep in touch with these latest developments and to express his views on the various ethical and sociological problems associated with them, Professor Ralph Barton Perry is devoting his best attention; it is, therefore, by the study of his writings that one may hope most conveniently to gain an understanding of the philosophical implications involved in these movements. It is possible, however, that in his preoccupation with the treatment of specific details, the reader may sometimes lose sight of the fundamental principles upon which Professor Perry's particular solution of these problems depends. Such being the case, it seems essential to pass in review Professor Perry's various utterances with the special purpose of bringing these principles and presuppositions to light; to see in general how he conceives of the relation

⁶ The case is quite analogous with the situation described by Mr. Kantor with reference to the nervous system. See his article in this JOURNAL, Vol. XIX, p. 38, on "The Nervous System, Psychological Fact or Fiction?" As Mr. Kantor states, too often "the nervous system is taken to be the tangible counterpart of the intangible psychic." Similarly, certain modes of behaviors have been treated as objective substitutes for prior subjective entities and processes.

between science and philosophy; and in particular what is his theory of the nature and functions of the mind.

In his Presidential address before the American Philosophical Association, December, 1920,¹ Professor Perry presents a brief summary of many of the views expressed in his previous articles, so we may conveniently use that paper as the starting point of the present discussion, supplementing it, when necessary, by reference to his other writings.

Professor Perry declares in this address that “. . . the great philosophical enterprise of the immediate future is the naturalistic study of man as a part of nature, interchangeable and interactive with his environment.”² To accomplish this purpose entails, to his mind, what some of his readers may consider a particularly novel conception of the relation between philosophy and the natural sciences, including within that division psychology. “The leaders of contemporary thought, such as James, Bergson, Dewey, and Russell, are distinguished by the utter lawlessness with which they introduce philosophy into their psychology and psychology into their philosophy. Perhaps they do not know the difference; in any case they ignore it. . . . Scorning schematic barriers and scientific etiquette they bluntly assume that the facts about human nature are all to be found in one place, and that it is not significant by what door you enter.”³

In other words, both philosophers and psychologists are in search of the same facts, and, forsaking dialectics, are to “observe what actually transpires.”⁴ Not “idle speculation,” but “direct observation” is to be the source of all our knowledge, both scientific and philosophical. And, to make more explicit his point of view, Professor Perry remarks that “. . . a careful effort to describe the act by which a knower selects his object, or the act of meaning, or the act of sense-perception, will inevitably lead an *empiricist*, . . . to attach central importance to the functioning of the physical organism.”⁵

What, first of all, is said in general of such a notion of the relation between philosophy and science? Professor Perry has stated his case with such cheerful and dogmatic assurance that the reader is justified in demanding conclusive evidence in its favor. Certainly it is not supported by a historical study of the course of human thought; never in the past have philosophy, and either science

¹ “The Appeal to Reason,” *Phil. Rev.*, XXX, 2, pp. 131-169.

² *Phil. Rev.*, XXX, 2, p. 136.

³ *Ibid.*, p. 137.

⁴ *Present Philosophical Tendencies*, pp. 322-3.

⁵ *Phil. Rev.*, XXX, 4, p. 407 (*italics mine*).

in general, or philosophy and any particular science, for long employed the same methods or occupied themselves with identical problems. In the very nature of the case, and for the sake of clarity in defining issues, it would seem that certain fundamental distinctions between philosophy and science must be maintained. So long as science must resort to abstraction in order to attain its legitimate ends, just so long must philosophy point out and even insist upon the necessity of a reinterpretation of scientific conclusions in the light of the more ultimate principles, immanent in experience as a whole rather than in any one part of it, which it is the proper business of the philosopher to bring to expression. Surely it is to the advantage both of the scientist and of the philosopher to recognize such a distinction as this, and it would not be difficult to suggest other important differences, *e.g.*, those concerned with the problem of values.

Then again it is a question whether or not the "leaders of contemporary thought" whom Professor Perry mentions as his sole authority in support of his contention of the present-day interconnection between psychology and philosophy, would themselves accept his statement on their behalf. Bergson, for example, insists that science fails to grasp the concrete nature of things simply because it is doomed to proceed by means of the abstract categories supplied by the intellect; to get at reality the philosopher must employ another faculty, more suited to its task, namely the intuition. There could hardly be a sharper distinction, at least in methodology, between the two fields. And of course there are other contemporaries, whose views are quite as worthy of respect as are those of the authorities he cites, who would very definitely reject Professor Perry's viewpoint.

Nevertheless, the adoption of any other point of view than that represented by his fellow empiricists, is contemptuously cast aside as due to "sentimental" or "religious" prejudices.⁶ Such "pure speculation," it is urged, may be a harmless enough pursuit, like a day-dream, but it is as little in touch with actual experience and the "facts" of human existence. That is to say, Professor Perry deliberately refuses to recognize as facts worthy of serious philosophical consideration, any particular facts other than those involved in the functioning of the physical organism. To be a fact means, then, it would seem, to be expressible in biological categories.

With the material adequacy of this conception we shall deal in the later part of the discussion. Our immediate concern is with the nature of the "scientific" method which is held to be so all-im-

⁶ Cf. *The Present Conflict of Ideals*, pp. 378-9 and *passim*.

portant. It seemingly is implied in the passages quoted above that by mere observation we may hope to discover the facts about human life and experience, and then, presumably, will go on to formulate the significant laws of human nature on the basis of these previously discovered facts. But quite irrespective of the identity or non-identity of philosophical and scientific methodology, science, simply *qua* science, does not, and logically can not, follow such a procedure. Scientific experience flatly contradicts the assertion that there are bare original particulars, existing by themselves, as, *e.g.*, the doctrine of external relations would seem to imply, upon which the scientist proceeds to direct his observation, for the purpose of later framing laws and hypotheses about them. For the scientist a fact is a fact—can only be a fact—in so far as it is already associated, or capable of association, in his experience, with other facts, forming a more or less consistent system. In other words, to possess any scientific significance, to exist at all for the scientist, or for that matter, for anybody, particular facts and general laws logically imply each other, and are inseparable aspects of a systematic dialectic.

It seems, therefore, that not only is Professor Perry's conception of the relation of science to philosophy open to criticism on the basis of the nature of the problems with which they are respectively concerned, but that so long as the methods of science itself are in dispute, no correct solution of the larger problem can be hoped for. Let us, however, except for these cursory remarks, waive for the moment both the very dubious conception of philosophy as sharing the same problems with psychology or any other sciences, and the complementary assertion of identity of method in the two cases. Let us rather turn to an examination of the particular facts which Professor Perry has discovered, by observing "what actually transpires" about human consciousness and some of its typical products. For after all, "the proof of the pudding is in the eating," and in a certain sense the proof of any method in philosophy lies in the results which it achieves; in the degree to which it serves adequately to explain our actual experience. We shall see that not only do these facts fail to represent the real nature of man's mind, but—what is, if possible, even more serious from Professor Perry's standpoint—that they even prove adequate to the task of defining consciousness in agreement with his own philosophical principles, and therefore, require considerable supplementation from the abhorred field of "pure speculation."

First as to consciousness. In *Present Philosophical Tendencies*⁷ it is defined, in accordance with the principle of attaching "central

importance to the functioning of the physical organism," as "a species of function exercised by an organism." It is "a selective response to a pre-existing and independently existing environment." Now, however adequate such a definition may be for the immediate purposes of psychology—and perhaps we may leave it to the scientific psychologist to decide the question for himself—the philosopher, it would seem, is in duty bound to point out the obvious abstraction contained in it. For of what "fact" can a serious empiricist be more certain than that an "independently existing environment" is not a part of his actual experience? At every instant, to examine the matter no further, man is transforming this supposedly independent environment; indeed his very presence in the world is already an implicit transformation in the shape of added values and deeper meanings. Thus a more flagrant case of "pure speculation" it would be difficult to mention. There is no element in concrete experience that it serves to explain; it stands there on its own merits as an unwarranted assumption which the philosopher would do well to avoid until all other more concrete possibilities had been exhausted.

But Professor Perry does not rest here; he proceeds to locate consciousness existentially in space and time. We find (would Professor Perry say "observe?") that it is "only one kind of thing among many";⁸ it intervenes as an are in the causal circuit of the nervous system, comprised of stimulus at one end and response at the other.⁹ But here is where observers apparently disagree, since the thoroughgoing behaviorist, the essence of whose method is observation, denies the existence of any such factor as consciousness. Parenthetically, we may remark that such confusion is due in part to an uncritical use of the terms "stimulus" and "response"; terms which some physiologists are learning to treat with more circumspection and care than formerly.¹⁰

However that may be, the further question naturally arises as to why it is necessary to conceive of consciousness, for scientific purposes, in existential terms at all. Many psychologists, except perhaps those who reject the concept altogether, would rest content with defining it, as indeed Professor Perry himself does at the outset, as a process, an activity, exercised by the natural organism. And, moreover, this is all that consistency with Professor Perry's psychological principles demands. Then why attempt to ascribe to

⁸ *Present Philosophical Tendencies*, pp. 322-3.

⁹ Cf. "A Behavioristic View of Purpose," this JOURNAL, XVIII, 4, pp. 85-105.

¹⁰ McDougall, "Prolegomena to Psychology" in the *Psychological Review*, XXIX, 1, pp. 1-43.

it characteristics usually associated with physical thinghood? The answer is, as indicated above, that the merely scientific account proves inadequate for philosophical purposes and hence must be supplemented by certain hypothetical principles of neo-realism. Thus the account of the neo-realistic solution of the riddle of the dualism of mind and body runs as follows: "Consciousness is homogeneous with the rest of the world in the sense that it is composed ultimately of the same elements"¹¹—or "neutral entities." That is, consciousness, a tree, man, a mathematical system,—in short, whatever in any sense exists, or may be thought about—reduces by realistic analysis to these same neutral entities. But a neutral entity, whatever else it may be, is not an empirical fact; it possesses no properties amenable to scientific or to logical scrutiny; it has nothing to do with the functioning of the physical organism, empirically considered; it is simply a metaphysically postulated element conceived, principally, it would seem, for the purpose of constructing reality out of bits.

Such is the stratagem to which Professor Perry's neo-realistic empiricism is forced by a natural logic more powerful than any resolution an individual thinker or group of thinkers may form not to recognize it. However much he may insist upon construing reality "scientifically" in terms of particular observed facts only externally related to one another, however much he may resolve to focus attention solely upon the particular physical organism, the neo-realist is at last driven to posit some sort of a logical connection, an artificial universal, to take the place of the real universal binding these particulars together. Having forsaken the real universals displaying the identity in diversity actually found in experience, he is obliged to adopt as a substitute some logical fiction such as the neutral entities, thereby reducing the articulated universe to a bare and formal identity wholly unlike that known to concrete experience. In other words, we are contemplating the logical results of artificially separating factors, such as the individual and the external environment, which actually are intimately bound together in the concrete whole of things. It is the attempt to employ in philosophy the method so successful and legitimate in science—the tool of abstraction. So that how Professor Perry is to reconcile his insistence upon the employment of solely empirical "scientific" methods of direct observation in the acquisition of the "facts" of experience with the purely speculative theory which he as a philosopher sees fit to adopt, we must leave to him to explain. One thing is evident, namely, that not the facts alone or even

¹¹ *The Present Conflict of Ideals*, p. 376.

principally, but certain assumptions, furnish the real basis of his conception of the nature of consciousness. Yet it is not against the making of assumptions that one may complain, for all thinking involves such a factor,—though, incidentally, Professor Perry's own principles seem logically to preclude for him the making of them—but rather the uncritical, dogmatic assertion of these particular ones, as if they required no examination as to adequacy but were self-evident and directly derived from the facts of experience.

Thus the net result of the application of Professor Perry's empiricism to the facts of consciousness is failure to derive a consistent or satisfactory account of its nature. The great wonder, however, is, not that the outcome of such a self-contradictory procedure should have resulted in failure, but rather that it could ever have been thought to possess any possible value as a method of philosophical explanation. It should serve as a concrete example of the results to be expected from the attempt to disregard the logical principle that form and matter mutually condition each other; that there is no general abstract logical constant or bare identity such as a neutral entity, which can be applied effectively and indiscriminately as a principle of explanation to each and every part of experience on the general assumption that all experience is reducible to the existential or quasi-existential terms of natural science.

Indeed, a close inspection of Professor Perry's various writings only goes to confirm the first impression that we have to do with a serenely naïve point of view with regard to, for example, such problems as that of the nature of the mind, quite on a level with that of the ordinary uncritical writer of text-books on physiological psychology. He makes no attempt to examine the presuppositions involved in such an attitude, and the outcome, thus far at least, of the identification of science and philosophy, as proposed by Professor Perry, is, therefore, a mere juxtaposition of certain philosophical principles, not cogent to the problems at hand, with the uncriticized results obtained from a narrow field of scientific investigation.

And when we turn from a consideration of his conception of the nature of consciousness itself to his application of the conception to an interpretation of such mental products and activities as purposiveness and belief, we shall see that here, even more explicitly, the attempt to unite philosophy and science in a single, identical enterprise, results in a merely scientific outlook, with all of its attendant abstractions and naïveté.

"Biologists," Professor Perry declares, "and even chemists are discussing teleology with open and receptive minds."¹² This re-

¹² *Phil. Rev.*, XXX, 2, p. 136.

mark is important because our writer says elsewhere: "Man and his faculties belong to the fields of the biological sciences and are therefore subject to the methods and laws which are proper in that field."¹³ Evidently we may expect that human purposiveness as well as consciousness will be defined in accordance with the biological categories. We may conceive of the human mind, Professor Perry explains, as a "unified reaction-system which . . . will control both the internal adjustments of the organism and its dealings with the external environment." If the response be impeded by an obstacle a series of trials and errors ensue until a reaction occurs "by which the impediment is removed."¹⁴ "The object exciting the successful response will thereafter be charged with a meaning or will partially reawaken that same response. . . . When a response occurs on that account, that is, when an act is performed because in its implicit form it coincides with the unfulfilled phase of a determining tendency, we may say that it is performed purposively."¹⁵ Note, moreover, that "a belief of some sort, an act of the intellect which is either true or erroneous, is . . . invariably one of the factors in a complete human act. . . . These two factors [belief and determining tendency] unite to constitute purposive action. . . ."¹⁶ That is to say, we use our intellect as a complement to our other faculties to perform ideal experiments to determine how particular ends may successfully be attained. In Professor Perry's own words, "The function of the intellect is the acquisition, testing and application of true beliefs. A belief is an anticipatory response set for a *specific* occasion, and its truth lies in the complementary relation between the response and the occasion. [The truth of] a belief is tested by trying the response on the occasion, or by trying it conjointly with other responses whose truth is assumed, or by comparing it with the responses of others."¹⁷

So far human purposiveness seems simply to refer to "an organism endeavoring to find its way in the midst of nature."¹⁸ But, as if convinced of the inadequacy of this purely biological point of view Professor Perry seeks to do justice to the claims of more particularly "spiritual" interests. "That there is an interest in truth, or a specifically theoretical activity, which may assume a dominant rôle in an individual life, is a brute fact of human behavior."¹⁹ Surely here, if anywhere in Professor Perry's system,

¹³ "The Integrity of the Intellect," *Harv. Theo. Rev.*, 1920, pp. 222-3.

¹⁴ *Phil. Rev.*, XXX, 2, p. 139.

¹⁵ *Ibid.*, p. 139-40.

¹⁶ *Ibid.*, p. 143.

¹⁷ *Ibid.*, p. 157. (Italics mine.)

¹⁸ *Ibid.*, XXX, 2, p. 140.

¹⁹ *Ibid.*, p. 139.

we may hope to come upon a distinctively human end. Here at last we shall discover the mark that raises man above the brute, and reveals him as more than a merely life-desiring physical organism. Here we shall learn the true meaning of the phrase, "it is the nature of the mind to know." And we read on, ". . . truth being the value which attaches to a hypothesis or idea in so far as it fits the environment. The technique of induction is the technique of contriving such *determinate* expectations as can bear the ordeal of empirical fact." ²⁰

But this is only to repeat what we had already learned; the "independent" activities of the intellect neatly narrow themselves until they fit wholly into the previously prepared biological categories in accordance with the cardinal principle of attaching central importance to the functioning of the physical organism,—which is, after all, we must admit, as much as we could expect of a naturalistic empiricism if it is to be self-consistent. That is to say, we have discovered the empirical facts about human nature, and "all in one place," as it was promised that we should. Purposiveness, belief, truth, as well as consciousness are construed on the basis of the relation of the independent, *i.e.*, merely *subjective*, individual to the external environment. The sole function of man's mental attributes consists, in the last analysis, in the fitting of specific responses to determinate occasions. And this, we must bear in mind, not merely for the more immediate purposes of natural science; it is considered to be an ultimate philosophical position.

Now the principal criticism that may be directed against such a conception of the nature of purposiveness, belief, and truth,—or of mind in general—is, not that it is wholly false to the facts of experience, but rather that it does not cover all the facts. Obviously, however, it follows from this objection, if valid, that Professor Perry's views do not adequately account even for those facts assumed to be the sole ones observable as constituting human experience. And it may be said at once that his failure to do justice to the nature of such conceptions is largely inherent in the previously noted logical weakness of his abstract, "scientific" method of interpretation of experience. In the following paragraphs, therefore, we shall attempt to indicate some of the most obvious shortcomings, as we see them, implied in Professor Perry's assumptions.

We have already pointed out the abstraction contained in the use of the phrase "external environment," while tentatively admitting its validity under certain definite conditions, for the purposes

²⁰ *Harv. Theol. Rev.*, 1920, p. 228. (Italics mine.) Cf. also *Present Philosophical Tendencies*, pp. 323ff.

of science. But indeed one may question even the scientific relevancy of the term, if it is taken to signify *pure* externality. Yet this is apparently its meaning for Professor Perry, based as it is on his doctrine of external relations. We must insist again, however, that such abstractions have no place in an ultimate account of things such as philosophy professes to be. Philosophy, if not science, must recognize that man is not superadded from the outside to a strange and foreign world; rather he is part and parcel of his world and it of him. If now we find it necessary to consider the environment apart from man's relation to it, as, *e.g.*, in the physical sciences; or if we may profitably consider man apart from his environment, a very doubtful hypothesis for any science, we have always to remember that ultimately the two factors are not independent but complementary. We began by making an obvious abstraction; we should conclude by reuniting what we momentarily tore asunder. This is only to say that the distinctions which we make between mind as such and nature as such ultimately fall within the concrete whole of things.

Granted that this be true, it is obvious that an attempt to explain or describe purposiveness, belief, or truth in terms of the relation of an individual to an "independent" and "external" environment, however broad a sense we may apply to the latter term, is bound to result in failure. At the very start of our attempt to attain an adequate philosophical insight into the nature of things we prejudice our cause by limiting our vision to an arbitrarily specified field bounded by abstract biological categories.

A specific example will perhaps serve to make clear the distinction between Professor Perry's views and those of a more satisfactory alternative position. A human being, let us say, *is* a physical organism, in time and space, composed of chemical elements, and possessing a life-history. But what is thus true at certain stages of knowledge, *e.g.*, the biological—falls far short of the whole truth at the stage at which such a human being assumes his place in society as a member of a family, a friend, a political associate. What binds him to other members of society depends in part upon physical and biological conditions, but certainly not less upon intellectual, esthetic and ethical considerations. These higher phases include and transform the significance of the lower ones. The merely external aspects are transcended, though preserved, through the recognition that mind is the binding thread which unites the particular individuals in a systematic whole.

In such a sphere, which, be it noted, is only the rightful heritage of man as a human being, thought is not forced to satisfy its

natural tendency by seeking identity in artificial abstractions, *e.g.*, neutral entities, below the range even of the physical sciences. Rather the difficulty of finding this identity becomes less as the standpoint progressively approaches that of thinking, rational beings,—our fellow-men. Once past the mechanical standpoint of physical science, perhaps even *in* physics, this bare and formal identity begins to develop within itself the complementary aspect of diversity—a diversity which does not destroy but only adds to the richness and concreteness of the identity.

From this standpoint we may retain, so far as valid, Professor Perry's interpretations of purposiveness, belief, and truth, but it is highly important to recognize that while retained, they are also quite as surely transcended. For example, it is doubtlessly true in a sense that the individual must occupy himself with the framing of "determinate" responses to "specific" occasions in which he finds himself involved in the round of daily experience. But it is quite obviously an abstraction to seek the whole meaning of his conduct in such transient acts. A life organized on such a plane of animal existence is just the one Socrates cried out against as not fit for a man to live. And besides all this, there is to be accounted for in any system of philosophy worthy of the name, the fact of man's interest in—quite as they are for themselves, and apart from any survival value they may incidentally possess—"the good, the beautiful, and the true."

Religion, art, and philosophy, we like to believe, are more than mere expressions of animal behavior, or the result of sentimental prejudice for idle speculation. They are ways of giving utterance to man's sense of oneness with, and of participation in the universe (including of course the natural environment) as a whole. As such they possess a value, a meaning, not expressible, it is true, in biological categories or in terms of abstract empiricism, but none the less real and philosophically significant for all that.

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BEHAVIOR AND PURPOSE

THROUGH the importance assigned to objective conditions as contrasted with subjective, and to methods of behavior as contrasted with beliefs, the present century has witnessed the development of a new emphasis in philosophic and psychological in-

terpretation. We no longer attribute preëminent importance to the individual's conviction, but ask for objective biography rather than for introspective autobiography. Not what a man says but what he does gives us the fruitful insight into his character; when saying and doing tell different stories we accept the latter as the faithful record and call the former misstatement. Our interest in the latter, in the doing, is not to be explained as getting us nearer the truth, since we may as correctly ascertain what a man thought as what he did; it is to be explained as due to our feeling that the latter method gives us better insight into what is of most importance. This method of interpretation has been fruitful of results and promises even more than present performance, indeed, is but the threshold of a new understanding. The path along which it beckons leads into a land of promise whose first fruits are heartening. But, as happens with new points of view, there are misunderstandings and misapplications.

The behavioristic view is sometimes interpreted by its champions as ruling out purpose and "ethics," as being in itself self-sufficient and irreconcilable with our previous standards of procedure. We believe this to be true only in part, and to a smaller extent than is commonly admitted by the supporters of behaviorism. So far from true is it that "ethics" is irrelevant to behavior that one might say it is never irrelevant. The possibility of reducing all ethics to forms of behavior has, as its supplement and counterpart, the possibility of reducing all behavior to ethics. Analysis of altruism into sympathetic behavior which simply behaves in that classifiable manner does not preclude ethical analysis of sympathetic behavior, nor of the behavioristic classifier.

Behavior is not just *behavior*. It is behavior of a certain drift or drive,—otherwise it were useless to classify it as behavior. When the behaviorist puts forward his thesis he does so with a purpose in his behavior, not merely that he may behave. Behavior is not of equal or indifferent significance. Some sorts are of great importance for human beings, others are relatively unimportant—a truth so obvious that only a persistent blindness to it in some quarters can justify the near tautology. The test of behavior should be behavior itself, indeed, must be in terms of behavior. But by what sort of behavior shall we test behavior? What shall be our standard and how shall it apply?

The significance of behavior, let it be submitted, must be adjudged in the light, not of similar nor of less, but of larger and more inclusive schemes of behavior. At any moment my walking from my house to the letter box can be analyzed as putting one step

ahead because the other is behind, as a continual catching myself from falling in the direction in which my body is moving, as an intricate system of muscular cheeks and balances calling into service an intricate nervous system of finely adjusted interactions. Such a cross-section analysis of my activity may be correct in every detail yet be relatively meaningless as an explanation of my activity. Its explanation can be found only when the cross-section is made lengthwise, and includes my whole procedure from house to mail box. The significance of the detailed behavior becomes evident only in the light of my larger and more inclusive behavior. This last-mentioned behavior is, again, only relatively self-complete, and for more complete understanding must be related to my larger schemes of behavior. In other words, any detail of my behavior is a phase of all my behavior, often as important a phase of my future behavior as of my recent or remote past.

The systems of behavior represented by various living species of animals are not of equal import, much less are the systems of behavior represented by various individuals of equal import. Often, the significant thing about the behavior of an individual is its relation to the behavior which characterizes his historical epoch or his class. Man as a species represents types of behavior and man as a historical creature represents progressive changes in types of behavior. The importance we assign to individual behavior must depend upon the importance we assign to types of behavior. These types may be potential as well as actual ones, unrealized as well as completed histories.

As history itself, though concerned with the past, can never be concerned with the past as such, but must possess selective insight and philosophic guidance, so a psychology concerned with behavior can never be concerned only with behavior. It must be concerned with some types more than with others, with the significant rather than the insignificant. Behaviorism is a point of view and must justify itself by its fruits. It can classify under its categories, but must itself submit to classification. By whatever behavioristic term the test be called, behaviorism must submit to the test of significance and value.

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BOOK REVIEWS

Evolutionary Naturalism. ROY WOOD SELLARS. Chicago: The Open Court Publishing Company. 1922. Pp. 343.

This volume invites attention as the first published attempt to base a metaphysical system upon critical realism. Professor Sellars

believes that a new naturalism, supplanting the older materialism, is indicated when the categories are examined in the light of an adequate epistemology and when principles derived from a study of the biological sciences are given due importance in metaphysical explanation. The insufficiency of the older materialism is ascribed to its tendencies to hypostasize scientific concepts and to reduce biological to physico-chemical processes without a remainder.

Two chapters are devoted to an account of the epistemological foundation on which the author's metaphysics is based. This account does not differ from his earlier writing on the same subject. He maintains that physical entities are not objects in their own right, but are made such by the selective activities of the organism. Objects are known by means of data in consciousness which, however, are wholly subjective and existentially distinct from the objects known. Thus knowledge is not intuitive, as idealism and naïve realism suppose, but mediate. Nor is knowledge obtained from data which are copies of physical entities, for by means of data we know objects, not our subjective states. The adequacy of cognition rests on the fact that nature controls the knowledge-process in the interest of biological adaptation. The categories, therefore, are truly informative of the physical world, for "nature itself would need to change before they would become invalid" (p. 81).

The major portion of the book is given over to discussion of the individual categories. It is emphasized that there are different levels and contexts of interpretation from sensation to conception and abstraction, and that a true estimate of the value for knowledge of any category can be obtained only by a genetic consideration. The author finds these levels of interpretation continuous in the main and informative of the physical world. Thus the sensational elements of our spacial experience connect naturally with the conceptual, and even abstract mathematical space gives information about real space.

"Space as a category is not an external reality. To assert that the physical world is spacial, means, not that the physical world is *in* a non-dynamic receptaculum analogous to mathematical space, but that certain predicates are interpretative of its actual constitution and nature" (p. 99). These predicates are found in judgments of position, relative size, contour, distance, and direction. "*These elements give the very meaning of space as a category*" (p. 99). In like manner, "temporal contrasts should not be read too naïvely into nature" (p. 120). The world is temporal, rather than in time. Sellars subordinates the category of time to that of change; real time is change in the physical world.

In his treatment of things and their properties, the author reaches the conclusion that the distinction between substance and properties is epistemological rather than ontological. A substance is the subject of predication in a judgment. Hence it was supposed that there was a unitary and unknowable substance supporting properties. The true view, however, is that properties are simply the elements of our tested thought of the thing. Things *are* (partially) their known properties. All sense-data are materials for knowledge; all qualities are contentually subjective; the distinction between primary and secondary qualities rests on either an intuitionist view of knowledge or a naïve copy-theory. Qualities and quantities are not opposed; colors, tastes, and odors, as well as shape and size, are indicative of physical conditions. But "in no case is there assumed to be a *resemblance* between a sense-datum and its external cause. What does hold is an ordered correlation so that to every difference in the one there is a difference in the other manifold. It is because of this ordered correlation that we are able to infer the size, structure, behavior, position and internal constitution of physical objects" (p. 188).

The evolutionary naturalist is a pluralist and is sympathetic with the doctrine of external relations as against logical monism. He finds, however, both continuities and discontinuities in nature, and he maintains that the question whether any particular relation is internal or external is to be decided solely on empirical evidence. Many biological relations are internal, and the character of their terms has become modified from the time when they entered into relation. Relations themselves must not be reified; there are terms *in* relation, not relations *and* terms.

Russell's mathematical analysis of motion, while defended, is declared not to be exhaustive. Motion, for Professor Sellars, is a case of behavior implying energetics, and back of motion lies force. He recognizes that if we use the concept of force as a principle of explanation instead of passing to a quantitative description of its manifestations, we shall get nowhere, but he says that the limitations of our knowledge should not be permitted to empty reality of any content for which we have an empirical basis. (One may question whether he has been equally scrupulous in respect to the empirical content of colors and odors.) We are urged irresistibly to the positing of force in objects by our fundamental realistic belief that bodies are something in themselves and have a determinate nature. But it is not admissible to follow idealism in its belief that the activity which we experience in consciousness is the only type of activity in nature.

We must avoid interpreting the world in terms of human agency, as well as the tendency to reduce causality to logical implication. Like other categories, causality is informative of reality. Causality is more than sequence, more even than a uniformity of sequence. It tells us that change is not adventitious, but that it "grows out of the very heart of that which changes. But, if so, change throws light upon the nature of the changing system; it is the kind of a system to produce this change as an end-term" (p. 248). A scientific treatment of causality as opposed to a naïve view seeks to appreciate, not two factors, but all the factors at work. Causality is not purely temporal; it is spacial as well, and it signifies the activity of a changing system.

Freedom, treated in the manner made familiar by the writings of Windelband and others, is reconciled with determinism by analysis of the meaning of these concepts. These attempts fail alike to explain the crucial instance of the exercise of freedom when the self is "divided." Novelty is regarded as descriptive of the evolutionary process, but not as in conflict with continuity. From Professor Sellars' own standpoint, I can not but feel that novelty would find more satisfactory interpretation as a subjective category. If real time is change in the physical world, novelty would be a concept that we would apply to the succeeding state as compared with the former, when there was a striking alteration in data. Empirical teleology is defended. It is especially apparent in organisms, where each organ has its function which assists in the working of the whole. "This ordering is maintained by structural and functional coördinations" (p. 337). We must be careful not to inject naïve anthropomorphism into the concept, but on the other hand we must not underestimate the physical world. The chapter which deals with mechanism and teleology is especially vague and inconclusive.

The fact that the structure of consciousness reflects the position and adjustments of the organism suggests that there is no existential independence of consciousness from the brain. The burden of proof that there is a separation rests upon dualism. "Evolutionary naturalism does not believe that the higher levels of nature are purely mechanical; it accepts critical points with resultant new properties" (p. 292). "Who has a right to say *a priori* how great a novelty may arise and so set limits to the possibilities of nature?" (p. 297). The author describes his view as a development of the double-aspect theory based on critical realism (p. 294). Consciousness, however, is not an aspect of the whole physical world, but a novel aspect of brain-activity, functional in char-

acter. The biological sciences indicate that an organized system is more than the sum of its parts, and that a whole may exert control over its parts. Thus consciousness is efficacious. The brain is "a stream of tendencies lit up by consciousness" (p. 316). "The contents of consciousness are correlative to neural processes which are not found at the inorganic level. They come and go, and yet, as memory shows, they are not completely lost. . . . The difference between the conscious and the unconscious must be one of degree and not of kind" (p. 318).

Critical realism steers a middle course between skepticism and intuitionism. When a critical realist seeks to build a metaphysical system in harmony with his epistemology, one is interested in watching how far his faith will carry him. Faith here is acceptance of data as revelatory. The question arises (and the answer given will vary with the individual thinker), what aspects of the conscious content shall be accepted as mediating knowledge of a reality beyond the knower? Professor Sellars finds his answer to this question in his faith in the results of the special sciences, the achievements of enlightened common-sense. That he is not entirely successful from the metaphysical standpoint is partly due to the limits which bound his faith. But one wishes that he had broadened somewhat his own method of investigation. He is so deeply interested in inquiring about the nature of the physical world that it has not occurred to him that a correlative study is that of the characteristics peculiar to conscious processes. He has studied the character of data only in reference to their cognitive value. Now science reaches knowledge that is *formal* in character. And the knowledge of the physical world which Professor Sellars defends is, correspondingly, a knowledge of "size, structure, behavior, position, and internal constitution of physical objects." But he has not explained by a study of the conscious process the reason why knowledge is thus limited. He has chosen rather, except perhaps in his treatment of force, to ignore the fact that physical science can not do without a fundamental substance, whether ether or electricity, and to assimilate naïvely substance and quality to structure.

While this mode of procedure is not entirely unconvincing in his discussion of the inorganic, it encounters vast difficulties when he comes to treat the mind-body problem. Here the only correlations of which he can speak are those of structure and function. The warm, sensuous characteristics of conscious qualities have not been anticipated by a slow evolution of substance. They burst out of structural properties in a way that Professor Sellars can de-

scribe only by the word "novelty." We must not indeed "set limits to the possibilities of nature," but reason herself sets certain limits beyond which she encounters the irrational. If, as the author himself avers, in conscious activity alone we are "on the inside," evolutionary naturalism might lead more readily in the direction of pan-psychism or Haeckel's monism. Either of the latter would afford a better escape from dualism—which, of course, is equally compatible with critical realism.

Professor Sellars is to be commended in his attempt to square critical realism with naturalism. His writing suffers, however, from a disorderly style. The headings and sub-headings of the individual chapters are clear, but their matter often reads like a note-book, rather than like a finished treatise. This fault is unfortunate in an age when philosophers are striving to reach mutual understanding.

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NOTES AND NEWS

Professor A. N. Whitehead of Cambridge University has been elected president of the Aristotelian Society for the coming season. His inaugural address will be delivered on November 6th.

Dr. Henry H. Goddard, former director of the State Bureau of Juvenile Research at Columbus, Ohio, has been called to a professorship in abnormal psychology at Ohio State University.

THE JOURNAL OF PHILOSOPHY

SOME LOGICAL ASPECTS OF CRITICAL REALISM

IN isolating the logical aspects of "Critical Realism" as set forth in the recent volume of essays under this caption, certain obstacles are early encountered. First, there are numerous and important differences of opinion among the writers which makes it difficult to reach a common doctrine. Second, the discussions of knowledge are confined almost entirely to perception. Keeping strictly to perception, we could hardly expect it to carry us very far into logical operations. Still, for critical realism perception is knowledge; and though it involves no inference, it has the character of "truth," or "error," to which a special chapter is devoted. In the rôle of knowledge and with the capacity for truth and error, perception, while held to be "immediate," gets to be a very highly mediated case of immediacy, requiring a lot of logical machinery to run it.

Indeed, to my mind we have here that first disobedience, which is the source of so much subsequent logical and epistemological woe; namely, the confusion of the entities and machinery of logical operations with the familiar things of immediate experience. It is the old, old sin of the reflective fallacy, the logician's vanity, which has dogged philosophy from the beginning. As soon as we acquire a little reflective capacity and machinery we are like a farmer with a new grinding machine, who wants to run everything on the place through it, until even the members of the family are in danger.

This generates a double set of difficulties. It reduces immediate experience, or, to use the critical realist's term, the given, to the impoverished state of an hypostatized logical function called "essence," with the result that this emaciated given has to be surreptitiously fed up as the exposition proceeds. On the other hand, it forces logical operations and categories in their attempt to play the rôle of immediate experience to become a hybrid sort of meta-physical entity, half subsistent and half existent, with little prospect of ever reaching their *own* goal of truth and error.

In perceptual knowledge, we are told, there are three fundamental factors. First, the given, the datum. This can not be an existence, physical or psychical, else, so runs the tale, there is no place for error. It must then be a subsistential, logical essence. Second, there is an existential "mental state" which is the "carrier," the "vehicle" of the essences. In passing, we may note that the critical realist does not seem at all disturbed by the troubles which the Greeks encountered in thinking of a subsistential essence as a passenger in an existential taxi. Third, there is the physical object of which essences are "instinctively" and "irresistibly" affirmed.

Such is the official cast of the characters in the drama of perceptual knowledge. Whereupon someone may say that so simple a plot for a one-act play scarcely warrants the charge of complications and entanglements. But those of you who have followed the text will agree, I think, that we do not get very far before we discover that the official cast and plot is really only a part of one scene. For it becomes evident, at once, that one of the star performers—it is a little uncertain whether it is the hero or the villain—is left out of the official cast altogether; namely, the *bodily organism* of the knower. For we are told that not only do mental states, but the very constitution of the given essence, depend on the bodily organism. As the plot thickens, we note, too, that some of the other characters begin to assume new rôles. The mental states which at the beginning are simply "vehicles" for the essences soon, like Locke's cabinet and sheet of paper, begin to do strange things for vehicles. They perform operations which the authors call "associating," "willing," "having an interest," "turning the attention," etc. One writer speaks of turning on and off the searchlight. The image of a psychical taxi turning its own headlights on its own passengers is engaging. Whether the lights are properly dimmed is not stated: but it doesn't stop with turning on and off the lights. It begins to take liberties with its subsistential passenger. For we are told that the total character of the passenger (the essence) depends on associative operations of the vehicle (i.e., mental states) as well as on the constitution of the bodily organism.

Not to overwork the figure, it is obvious, I think, that the various problems of this account of perceptual knowledge center about the origin and nature and function of these essences in their relation to the other three main factors, the mental states, the bodily organism, and the physical object. On the one hand, in many statements, especially of Santayana, to whom Professor Strong says he owes the "precious" conception of essence, these data seem to be

detached, floating, subsistential essences quite in the Platonic and neo-realistic sense. They include all possible qualities and complexes of qualities, primary, secondary, and tertiary. These seem to appear in the mental state on the *occasion* of certain activities of the bodily organism, which may or may not be a response to the stimulus of the physical object perceived according as the perception is veridical or illusory. When the perception is "true," the essence given in the mental state is identical with the essence of the physical object. Thus, in the case of veridical perception, the essence has two loci, it rides simultaneously in two "vehicles," the mental state and the physical object.

On the other hand, we find such statements as this: "Perceptual error is possible because data, that is the essences, are directly dependent on the individual organism, not on the external object, varying in their character, with the constitution of the sense organs, and the way in which these are effected." Such passages might be charged to careless composition, the meaning intended being that the *appearance* of the essence depends on the organism. But there is the phrase, "varying in their *character* with the constitution of the sense organs." Moreover, three of the group, Lovejoy, Pratt, and Sellers, insist that the essences are not floating, nomadic entities, but are the characters of the mental states themselves, and as such are existential, not subsistential.¹

But how far is this determination of essence by the bodily organism and the mental states to be carried? and just what then is to be their relation *as so constituted* to the physical object? In the first essay, Drake says, "It is the thesis of this volume that in so far as perception gives us accurate knowledge, it does so by causing the actual characteristics of objects to appear to us. "In so far as," but how far is this? Drake's answer is that the essences which we refer to the world about us, are not really there, except in so far as they really were there before perception took place. And (this is the interesting clause) "so far as secondary and tertiary qualities and most of the primary qualities, they are never there at all!" One may well rub his eyes over this passage. It is certainly queer-looking realism. Over and over we are told that it is the heart of the doctrine of realism that the *what* of the object, that is, its qualities and character, are given in the essences. But when all the secondary and tertiary, and most of the primary qualities are thrown out of the *what*, we begin to wonder just what "what" is left. The situation recalls a scene in the play "Happy-

¹ Professor Sellers' repeated references to the essences as "subjective," must be a source of great distress to Santayana.

go-lucky" in which a tipsy English constable is making an invoice in bankruptcy of dilapidated furniture. Standing before an unusually rickety piece, he makes this entry, "One wot-not, more not than wot." Drake doesn't say what this poor remnant of a "wot" is. Sellers, who is less cautious, ventures to give a list. He says that "time, space, structure, causal relations, behavior, are the only essences which *can* belong to the object in case of veridical perception." This is a fairly substantial list. But as Drake doubtless foresaw, its difficulties are proportionately numerous. First, it is important to observe that Sellers puts time as well as space into the essence, into the content, of the physical object, as distinguished from its existence. With time and space and all the primary qualities put into the "essence," what is left to constitute the "existence" of the object? The neo-realists have always carefully, if somewhat dogmatically, reserved space and time, as—to speak in a paradox—the essence of existence. But what is an existence that is neither of nor in time and space? How does it differ from subsistence? Further, if time and space, and the primary qualities are essences, what is the difference between the physical object as physical, and the mental state? The difference can't lie in existence, for the mental state is as much an existence (whatever that now means) as the physical object. If it be said that, while the primary qualities are given in the mental state, they are not given as *its* essence but as the essence of the physical object, we can only ask again since time and space have been transferred to essence, what constitutes the "physicality" of the physical object?²

But, conceding a physical object of some sort, and essences that may somehow "belong" to the physical object, how do we determine when they do and when they do not belong. This is of course the question of truth and error. Next to the longest chapter in the book is devoted to error. But most of the chapter is occupied with difficulties in other theories, a little of it to the formal definition of truth as consisting in identity of the essence *in* mental states with the essence *in* a physical object, and practically none to the question of how we find out whether and when these objects do really

² In the midst of such questions as these the reader is obliged to return often for reassurance to the closing sentence of the preface, which says, "We have found it entirely possible to isolate the problem of Knowledge" (i.e., from metaphysics). In the midst of his struggle with these questions, which multiply at a terrific rate, in dealing with the problem of introspection, Drake wistfully says, "The writer has his own ontological views, the exposition of which *would clear up this whole situation!*" For this boon I am sure most readers would gladly absolve Professor Drake from his oath, however solemn, to avoid metaphysics. (Italics mine.)

have them. In view of all the hard things said by critical realists about the "copy-theory" of naïve realism and the "identity" theory of neo-realism and idealism, the definition of the nature of truth as consisting in identity of essences, or of the reproduction in a mental state of the essence of the physical object, has a queer look. To be sure, we are assured early and often that the true and proper object of perception is not the essence, but the physical object, which is not to be thought of as at all "like" the essence. But while the object of perception must remain unlike the essence we get truth only in so far as the latter "reproduces" and is identical with the essence of the physical object. The essence must be unlike its object, but it can be true only as it is not only like but identical with the essence of the object. This implies that the "object" is different from its own qualities, which means that, throughout the entire discussion the term "physical object" should stand for nothing but the bare and empty concept of existence—an existence which has not even spatial or temporal character—since these belong to essence.

It is as easy to lay down a formal definition of truth as of anything else. It is quite another matter to show what we can do with it, and how the requirements of the definition can be met. If we search elsewhere than in the essay on "error" for an answer to these questions, we get this meager response from Pratt: "When the question of veridical or illusory perception arises, first of all, one appeals from one of the senses to the others to see whether they confirm one another. Second, we may appeal to other persons; third, we may watch the supposed object function. If it works out consistently with our own experience, and the experience of others, we may conclude that there is a real object." How far this is short of an answer to the problem appears when we recall that these formulæ are used by all theories alike and mean nothing until we go on to show in detail how they can be *applied* to the particular definition and description of knowledge which we have laid down. In the case of critical realism, the question is how can these three tests be applied to knowledge defined as identity of essence appearing in a mental state with the essence of a physical object. Take the first test—the appeal from one sense to others. Keeping in mind that sense qualities are essences, when we pass to another sense we simply pass to another essence. Now how can piling up any number of additional essences establish the existence of any one of them, if there is no existence to start with? When Pratt speaks of appealing from one sense to another, he, along with us, has in mind the ordinary and salutary experiences of appealing from our ears

and noses to our eyes, from our eyes to our hands, and so on. But we have to remember that in the theory we are discussing "all the secondary qualities" and "most of the primary qualities" are out of court on this appeal, since they never are existential. The appeal to other senses and other persons must then be confined to a remnant of the primary qualities. For example, in the case of appeal from our noses to our eyes, we should first have to filter out all of the secondary qualities, that is, the quality and intensity of the odor and reduce the smell to its spacial and temporal form, whatever that would be, and then repeat the performance with vision to which we appeal. How far this is from what actually occurs when we make these appeals is, I take it, sufficiently obvious. It is equally obvious that the appeal to other persons does not touch the real question at issue, which is, how they and we alike reach a decision on this question of the identity of essences. As for the third test, consistency with the rest of experience, this, for critical realism, can scarcely be more than a summary of the other two—that is, the appeal to the other senses and to other persons. And even if it involves anything more than this, the question is what *kind* of consistency can furnish evidence for this identity of essences? Once more in raising these difficulties, I am not challenging these time-honored tests. On the contrary, assuming their value, the challenge is on the definition of knowledge which it is supposed they can test; it is on their availability as tests of truth defined as identity of essences.

As said at the outset, all these difficulties flow from the initial mistake of confusing logical and non-logical experience, or if you shy at the term "experience," let us say logical and non-logical things or affairs. The theory starts with the thesis that what is given is simply a bare subsistentia essence. Then we find: that the essence is domiciled in an existent mental state; that it is conditioned by the constitution of the bodily organism; that it is affirmed—(Sellers)—"through the very pressure and suggestion of experience," and—(Santayana)—"through the assault, the strain, the emphasis, the prolongation of our life toward the not given,"—involving such things as interest and will and other persons, and yet none of these things are supposed to be given. No existence can be given. There is no doubt that this situation is "critical"; but is it "realistic"?

It is of course this complete evisceration of the given, this reduction of it to a pale, impalpable essence that still leaves critical realism in the toils of the epistemological problem, which is just the problem of the "leap," to use Santayana's term, from subsis-

tence to existence. But why set the stage for this spectacular "leap." Realism, "neo-" and "critical," needs to become more realistic; it needs to make a truly realistic start with existence. In so doing, it would at once be on good terms with that "common sense" *to* which it appeals when it talks of "the physical object," and *from* which it appeals when it talks of "essences." That it really does start with existences, such as bodily organisms, mental images, urges, strains, other persons and things, as given, must be, I think, now perfectly obvious. In an astonishing passage, in his section on the biological truths of critical realism, Santayana explicitly utters this. He says: "That this object—(that is, the physical object)—exists in a known space and time, and has traceable physical relations with all other physical objects, *is given from the beginning*. It is given in the fact that we can point to it."³ How can the official doctrine of the volume stand alongside this passage, indeed, alongside the whole section? Yet at the close of the next section, on "the logical proof," Santayana writes: "Knowledge has two stages or leaps, one the leap of intuition, from the state of the living organism, to the consciousness of some essence; and second, the leap of faith and action from this essence to some ulterior existing object." But in the passage just quoted the second "leap" comes first; and wipes out the first "leap"; for the physical object in space and time "is given from the beginning."

But some one may ask, if we begin with existence as given, where is the place for error? Now, if we were supposed to begin with all existence, or with a static, fixed existence, the question would be pertinent and embarrassing. But if we assume that we begin only with some existence which is also a changing existence, and that we as also existents have the capacity to determine in some measure the direction and character of this change, we need not be alarmed at the prospect of losing the possibility of making mistakes. It should go without saying that these existencies with which we begin are not the ultimate elements of physics, or biology, or psychology, or any other particular science, nor are they "physical" or "mental," or "true" or "false." So to take them, is again to fall into the reflective fallacy. But whenever any given existence is used to get some other existence, then it begins to take on the character and function of a logical essence. It no longer exists for itself as the object of admiration or fear or love or hate. It no longer holds the center of the stage, but has become now a means, a basis of inference, to another existence. This sudden change in the status of the thing, from existing "for itself," from its position in the

³ Italics mine.

spot light, will seem to some a surrender or at any rate a degradation of its former existential glory. A good rationalist will of course say that, on the contrary, this is a promotion of the thing. It is thus lifted from the pit of existential particularity into the glorious light of universality.

This change of status is further enhanced by the fact that usually it is only a small fragment or quality of the original thing that is used for this purpose of getting other things. And even this fragment gets a new incarnation in words and other symbols and in the nervous system of beings who continue to use it. But nowhere in all this is there a detached, floating essence. Always there is some remnant of the old existence, functioning in a new and wonderful way, but existence, none the less. Freely conceding that in reflective inferential operations specific qualities of given things may be "detached" by attention to serve as logical data and *as thus serving* may appropriately be called "essences," yet, if we are good realists, "critical" or otherwise, we shall not *begin* by converting the perfectly good "things and folks" of immediate experience into Bradley's celebrated "unearthly ballet of bloodless categories."

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BEHAVIORISM AND CONSCIOUSNESS

AS everybody knows, the quarrel of Behaviorism with introspective psychology is on no matter of detail but goes at once to the fundamental question whether consciousness in the subjective sense can any longer be made use of by science. Introspection still clings to consciousness and hence, it is said, deprives itself of the possibility of scientific accuracy and objective verifiability. It is owing to this that it has "failed to yield results comparable to those obtained in kindred sciences."¹ Objective and accurate and verifiable results can be obtained only by objective methods. Objectivity is the great solid advantage of Behaviorism, and through it alone, it is maintained, can a truly scientific psychology be achieved. Stimulus and response are measurable in a sense that subjective states never can be, hence the whole hope of making psychology truly scientific is based upon the success of the behaviorist method.

That psychology can never hope to be an exact science in the physical or mathematical sense so long as it continues to deal with subjective states as such is a contention to which I think all must perforce agree. That it can be made into an exact science by the be-

¹ Perry, "A Behavioristic View of Purpose," This JOURNAL, XVIII, p. 88.

haviorist method is, however, an entirely different proposition. The task of constructing a psychology in which consciousness (in the subjective sense) shall be entirely omitted and its place filled by various forms of describable and measurable and verifiable behavior is a much vaster undertaking than seems generally to be realized. Except for the describability, measurability and verifiability of its results, Behaviorism would have no claim to greater scientific value than introspective psychology; and the likelihood of our actually being able to measure or describe in detail these results and put them into such uniform sequences as shall be useful for science, seems remote in the extreme. Professor Watson himself speaks of one important type of behavior, central to psychology, as being "hidden from ordinary observation and more complex and at the same time more abbreviated so far as its parts are concerned than even the bravest of us could dream."² And not only must this grave practical obstacle be faced by those who would throw away introspection and trust to observation and measurement; a more fundamental difficulty is to be found in the fact that the same psychical process, if translated into behaviorist terms, may require fifty different translations—in fact, may never be capable of being translated twice alike, and hence may never be again verified and identified. Professor Watson's colleague, Dr. Lashley, gets a different tracing every time his subject thinks over a given sentence. The musculature of the larynx and throat are so varied that "we can think the same word by many different muscular combinations." Suppose now that we should somehow succeed in observing and measuring the hidden activities which are "more complex and more abbreviated than even the bravest of us could dream"; how, if they vary as Professor Watson admits they do, are we going to combine them into uniformities that shall be worth anything to science?

The various simple reactions and quasi-mechanical reflexes can, of course, be objectively described and observed and put into sequences with their stimuli; this, in fact, to some extent, was done by most introspectionists for years before Behaviorism was heard of. But when we get beyond these relatively simple processes and come to study those forms of behavior which are expected in the new scientific psychology to take the place of psychic states, we are as a fact presented with very little that is measurable, describable, verifiable or even observable. One of the most serious and successful attempts to point out the real substitutes for psychic states is to be

² *Psychology from the Standpoint of a Behaviorist*, p. 325.

found in a remarkable series of articles by Professor Perry,³ most of which appeared in this JOURNAL. The writer takes up in detail a number of typical objects of psychological study, such as curiosity, docility, purpose, belief, and subjects them to a rigorous analysis with the aim of putting them over into behavioristic and hence objective and scientific language. No one can fail to admire the subtlety and patience with which Professor Perry has pursued his attempt, but most careful readers, I think, will feel with me that the results are so abstract, so lacking in exactness and verifiability, as to be quite useless for science. Curiosity, for example, is to mean not the psychic state of wonder but "a determining tendency [in the nervous system] which moves the organism to acquire anticipatory reactions." This is good so far as it goes. But if the description is to be scientific, surely we must know *what* determining tendency and *what* anticipatory reactions we mean; we must be able to define and identify and observe them if they are to be of any scientific value. I hold in my hands, for example, an unopened letter and wonder what is in it. If our psychology is to be scientific, we are warned, it must make no reference to my psychic state nor attempt to use my feelings in explaining my subsequent action; to do so would be "to commit the fallacy of *obscurum per obscurius*."⁴ But I submit that the situation remains no less obscure if I am referred simply to determining tendencies and anticipatory reactions in the abstract. And the moment we leave the abstract and seek to isolate and identify these tendencies and reactions we find them more hidden, complex and abbreviated than the bravest of us could dream, and so variable and inconstant as to be incapable of formulation into any law that will be concretely significant. Is the identification and description of psychic states so much more "obscure" than the proposed behaviorist method? so much more obscure that it should never be resorted to as even a supplement to "objective observation"?

What would become of behaviorist description if psychic states were really left out by the behaviorist will be pretty plain to anyone who reads carefully Professor Perry's behaviorist papers. If he did not revert repeatedly to subjectivist, non-behaviorist terms, we should be at a complete loss to know what he was writing about. Various old psychological terms are taken up, stripped of their subjective

³ "Docility and Purposiveness," *Psychological Review*, XXV, pp. 1-20; "The Appeal to Reason," *Philosophical Review*, XXX, pp. 131-69; "A Behavioristic View of Purpose," this JOURNAL, XVIII, pp. 85-105; "The Independent Variability of Purpose and Belief," this JOURNAL, XVIII, pp. 169-80; "The Cognitive Interest and Its Refinements," this JOURNAL, XVIII, pp. 365-75.

⁴ "Docility and Purposiveness," *Psychol. Rev.*, XXV, p. 16.

significance, laboriously worked over into behaviorist terminology, elaborated with hypothetical sets and reactions, almost all in abstract formulation; and when at the end of ten or a dozen pages we are beginning to wonder whether we surely are following the author's thought, Professor Perry himself seems to feel that it is time to explain, and we learn with some surprise that the meaning of the whole is that belief is different from purpose or that truth is not wholly dependent on will or some other bit of insight which the introspectionist had never supposed was in need of exposition. I can imagine no one doing this sort of thing better than Professor Perry has done it, but I hope he will pardon me if I say that the whole process is likely to strike an innocent observer as a peculiar kind of *tour de force*,—like a translation of English into Chinese or of a child's primer into words of seven syllables—or of the mountain laboring and bringing forth a mouse. I can not but wonder whether it struck no behaviorist as a bit odd that the President of the American Philosophical Association found it worth while to devote his entire Presidential Address to a defense of the view that reason is not altogether negligible in philosophy and life. I refer to this chiefly, however, to point out that both in that admirable address and throughout his behaviorist papers, Professor Perry has to have recourse repeatedly to subjectivist terms, has to translate half a dozen behaviorist pages into two lines of introspective psychology, in order to clear up his meaning even to his behaviorist colleagues.

But not only is the behaviorist forced to make repeated use of introspectionist materials in order to be intelligible; he also finds it necessary to begin his investigations (if they are to be significant) with introspective facts and to keep them in mind constantly throughout his researches. The subjective facts both set his problem and guide his methods. Take, for example again, that ablest of behaviorist analyses, Professor Perry's series of papers. What are the significant things that he places before himself and his readers as objects of investigation? Are they nervous sets and muscular reactions? No; they are docility and purposiveness, belief and cognitive interests. The reason for this is plain. It is not physiological responses but the various conditions of consciousness that are chiefly significant for him and for us. How, moreover, does he come at his behaviorist and physiological conclusions? How, for example, does he know that a belief is an anticipatory set or implicit course of action correlated with a specific object to which one has committed oneself?⁵ Or that "it is the practical function of reason to effect certain internal adjustments by which preformed unit-responses are fitted to a govern-

⁵ This JOURNAL, XVIII, pp. 171, 173.

ing tendency"?⁶ Or that the "reserved responses" of most human action "must be conceived to possess unqualified physiological existence, even though they are not in action and even though they should never be called into action"?⁷ Does Professor Perry know these things because he or any one else has observed in the nervous system or in the body the "anticipatory sets," the "implicit" courses of action, the "internal adjustments" or the "connecting channels" which in a scientific psychology are to take the place of consciousness? I am not denying that Professor Perry's physiological guesses may be extremely lucky. The point is that his guesses are based only in small part on objective observation and are chiefly arrived at by interpreting into terms of the nervous system what he finds in subjective, conscious life. Thus, so far is Behaviorism from being able to dispense with consciousness that it has to fall back upon consciousness for the setting of its problems and the construction and verification of its hypotheses, and even for the interpretation of its own terminology.

For the sake of closer insight into the behaviorist method, it may be worth our while to examine at some length a typical case of behaviorist interpretation; and for this we can hardly find anything better than Professor Perry's analysis of purpose, which appeared in this JOURNAL in February, 1921. Purpose, according to Professor Perry, has two well-recognized characters: (1) subordination of means to end, and (2) determination by the future. Neither of these, we are assured, requires any appeal to consciousness. The subordination of means to end is to be interpreted as the subordination of various auxiliary activities to a determining and persisting tendency or set. Purpose is not to be found either in the persisting tendency or disposition alone, nor in the subordinate auxiliary activities, but in relation of the two. What now is this relation? Plainly it is not itself an activity of the organism. Nor can it be a spatial or a temporal relation. The auxiliary activity is not "subordinate" to the disposition in the sense of spatial inclusion nor of temporal precedence or sequence. The relation of subordination, according to Professor Perry, is essential to purpose; but how is it going to be expressed in behaviorist terms? We are told that it is the relation between means and end; but how interpret either end or means? It will not do to say merely that the auxiliary activities are adapted to their environment nor that their working is successful,⁸ for this could be averred

⁶ This JOURNAL, XVIII, p. 175.

⁷ *Ibid.*, p. 96.

⁸ At least as I understand Professor Perry, cf. pp. 103-04 of his paper on "Purpose."

of every reflex. Does then the on-looking psychologist read purpose into the relation and the activity? If so, where is the real purpose? And would not the purpose which the psychologist reads into it either be a conscious purpose in the old bad sense, or else in its turn need to be interpreted as the purpose which some other on-looking psychologist read into *him*, and so *ad infinitum*? Thus we seem projected upon a very wild goose chase indeed; for of course we are forbidden to interpret the end or purpose as a conscious desire in the mind of the actor. To do so would be to desert Behaviorism.

A similar difficulty awaits the behaviorist in his attempt to interpret the second of the well-recognized characters of purpose, namely "determination by the future." This essential characteristic of purpose, Professor Perry tells us, has usually been explained by saying that the "purposive act is governed by the antecedently existing idea of a future result." This simple and obvious explanation, however, can not be accepted by the behaviorist and must be refuted. One of the chief aims of Professor Perry's article, in fact, is to refute dualistic explanations of human conduct, and this particular dualistic explanation he refutes in one short sentence. It can not be the true explanation, he tells us, because "it goes to pieces on the rock of dualism."⁹ The simple explanation having been rejected, we are provided with a scientific one. "The solution would seem to be in the action of present dispositions which are correlated with future contingencies. A calendar of engagements filled out for the next month exists and acts in the present. Nevertheless, it is correlated serially and progressively with the future. Similarly, the responses organized and serially adjusted so as to be executed in sequence exist now among the determining conditions of present events. Nevertheless, they are functionally correlated with a sequence of events in the historical future—in their own future. A series of anticipatory dated responses is thus projected upon the present spatial field and provides a means by which the contingent future may be translated into the physically existent present."¹⁰

The question must be asked: *Is* this "determination by the future"? If it is, then so is every reflex a case of determination by the future and therefore of purpose; so is almost every event in the vegetable world and much in the purely mechanical world. Consider the composition and potentialities and tendencies of the seed which falls in the autumn, the decay of its enclosing shell, the long lying in comparative inactivity during the winter, the gradual development of the germ under the influence of vernal sun and shower; or the care-

⁹ P. 104.

¹⁰ P. 104.

fully constructed watch spring and flywheel, so exactly correlated to the future hours and minutes of coming days. Of both these one could say as truthfully as of sets and tendencies in the nervous system that "the responses organized and serially adjusted so as to be executed in sequence exist now among the determining conditions of present events. Nevertheless, they are functionally correlated with a sequence of events in the historical future—in their own future." Possibly the behaviorist will say that events and potentialities of this sort in the vegetable and mechanical worlds are also cases of purpose in which the present is "determined by the future." If so, what shall we take as an example of that in which there is no determination by the future? If the phrase is capable of so wide an application as to include watches and onions, it is, of course, hardly worth using. Plainly, I should say, the word purpose loses all distinctive meaning unless it be given its natural interpretation—the interpretation which every plain man, every scientist, every psychologist and every philosopher outside the behaviorist fold gives it—namely, that of a present desire or idea of a future result determining to some extent action toward that result. The only criticism of this dualistic interpretation of purpose which Professor Perry gives us is, as will be remembered, that it "goes to pieces on the rock of dualism." In other words, dualism is refuted by being shown to be dualistic.

This refutation of a dualistic view of purpose is by no means the only instance in behaviorist logic that looks suspiciously like begging the question. To refer to no more details, the general insistence that Behaviorism should supplant introspection in the investigation of mind on the ground that it is objective and introspection subjective is an open case of *petitio*. For the question at issue between behaviorists and introspectionists is exactly the question whether mind is susceptible of direct study by objective methods. To this question the behaviorist has two answers. One is the logical and metaphysical one, which we shall come to presently, of denying the existence of the subjective. The other and commoner is the methodological and illogical answer of carefully observing and writing down—or quite as often, imagining—various forms of human behavior and presenting the results as an objective description of mind. The logical nature of this procedure will perhaps be plainer if we apply it to an imaginary discussion in another field. Two men are discussing the question whether or not the value of a given individual to society is susceptible of statement in monetary terms. One of the disputants asserts that it can be so expressed, the other denies it. The former, thereupon, triumphantly produces the exact figures, in dollars and cents, of the man's income, and congratulates himself on having

refuted his opponent. Behaviorism can not, as a fact, dispense with the subjective in its attempts to describe mind; and could it do so, it would not be mind that it described. All its technical equipment and its hypothetical constructions are simply irrelevant to the main question.

To attack this main question in direct and logical fashion it is necessary for Behaviorism to deny the existence of consciousness (in the old-fashioned subjective sense), as some of the bolder and more clear-sighted behaviorists have been consistent enough to do. Thus Professor Watson identifies affection and emotion with sense processes or "pattern reactions," particularly in the glands and viscera;¹¹ while thought is to be interpreted as the activity of the language mechanisms.¹² In similar fashion Dr. Frost defines awareness as "the relation between two neural arcs";¹³ and Professor Bawden defines perception as "an attitude toward the object perceived, a reverberation within the sensorium."¹⁴ For Professor Holt, volition is a generating proposition or logico-mathematical entity descriptive of the motions of a living body.¹⁵ There is, to be sure, a good deal of hedging on the part of nearly all behaviorists on the question of the denial of consciousness. Sometimes, it is true, they deny it only from the methodological point of view. But with equal certainty (if they mean what they say) at times they deny it absolutely, that is, they deny its existence as a subjective entity. "It is a serious misunderstanding of the behaviorist position," writes Professor Watson, "to say, 'Of course a behaviorist does not deny that mental states exist; he merely prefers to ignore them.' He ignores them in the same sense that chemistry ignores alchemy and astronomy horoscopy."¹⁶ "Thought is not different in essence from tennis playing, swimming, or any other activity except that it is hidden from ordinary observation and is more complex."¹⁷ "Consciousness is not something inferred from behavior," Professor Singer wrote at the very dawn of the behaviorist movement; "it is behavior."¹⁸ "What we observe in so-called introspection," according to Professor Bawden,

¹¹ "Image and Affection in Behavior," this JOURNAL, X, pp. 421-28, and *Psychology*, Chap. VI.

¹² "Image and Affective Behavior," *Psychology*, Chap. IX: "Is Thinking Merely the Action of Language Mechanisms," *Brit. Jour. of Psy.*, XI, pp. 87-104.

¹³ "Cannot Psychology Dispense with Consciousness?" *Psychol. Rev.*, XXI, pp. 204-211.

¹⁴ "Presuppositions of a Behaviorist," *Psychol. Rev.*, XXV, pp. 171-190.

¹⁵ *The Concept of Consciousness*, Chap. XIV.

¹⁶ *Brit. Jour. of Psy.*, XI, p. 94.

¹⁷ *Psychology*, p. 325.

¹⁸ "Mind as an Observable Object," this JOURNAL, VIII, p. 180.

"is usually but the inner bodily beginnings, hidden from our view, of the same behavior which in its overt manifestations is described by external observation." ¹⁹

This absolute denial of consciousness to mind is in fact a necessity for Behaviorism. For if consciousness be admitted as a genuine characteristic of mind, Behaviorism, which leaves it out of account, cannot be the science of mind. And if consciousness be efficient as well as real, Behaviorism cannot be a science at all—not even of behavior. In so far, therefore, as Behaviorism admits the reality of consciousness, but claims to be a real science of behavior, it takes up the position of that form of Materialism which depicts consciousness as an inefficient epiphenomenon. This, I think, is quite undeniable; for the moment you admit that consciousness has the least imaginable influence upon our motor activities, those activities cease to be explicable by physiological conditions plus stimulus; there is a *lacuna* in the series of physical explanation; the behaviorist's description fails to reach the whole relevant event, and such partial description as he gives can never be generalized. If consciousness has any efficiency, I repeat, Behaviorism cannot be even a science of behavior. It is, of course, the realization of this fact that has led the bolder members of the school into the actual denial of the existence of consciousness in any other sense than as another name for behavior; and obviously to assert that consciousness is nothing but behavior is merely a somewhat shy and apologetic way of denying its existence, in the usual sense, altogether. But, if the behaviorist who admits the existence of consciousness is forced to take up the position of one branch of Materialism, the behaviorist who denies its existence altogether plainly adopts the position of the other branch. The difficulties of this school of Materialism have long been obvious. In fact, I think it would be safe to say that every one, including the behaviorists themselves, knows that the denial of the existence of consciousness (in the old and subjective sense) is really absurd. The question needs no argument—and in fact is hardly arguable. The recognition of the reality of consciousness coupled with the denial of its efficiency is, however, hardly less absurd. It demands an amount of credulity which very nearly passes understanding. Yet unless one or the other of these positions can be made tenable, Behaviorism falls even as a scientific method. As a supplement to introspection it may be useful enough; but once the behaviorist uses it independently or takes it as a science, he is inevitably committed—no matter how little he may like it—to a materialistic metaphysic with all its crudities.

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¹⁹ *Psychol. Rev.*, XXV, p. 179.

KNOWLEDGE OF OTHER MINDS

BEFORE we consider how it is that we know other minds we must state what we mean by mind. We shall not attempt any exhaustive analysis of the nature of mind but simply endeavor to point out some distinguishing feature by which mind may be recognized as an object of knowledge. Excuse the dogmatic tone for the sake of brevity.

I

Mind has two aspects that should be clearly distinguished. In one aspect mind is that which is undergoing sensuous experience. In the other aspect mind is knowledge of experience other than that which it is now undergoing. Mind is not only conscious of current experience but also of experience which occurred under other spatial and causal conditions; also of experience which other minds have undergone. Hence knowledge of experience is a very different thing from the process of experience which the mind may undergo in a given time, place and causal situation. To experience, and to know the meaning of experience, which is knowledge, are two quite distinct things. Mind is that which knows the meaning of experience. The meaning of a given experience is that total unit of experience of which the given experience is a fragment.

It is possible to experience an object without knowledge of the object. This occurs when one hears a sound in the dark without knowing what it means, or sees a glint of light in the distance without understanding its significance or undergoes a stream of sensuous experience without interpreting it or retaining it in mind because of preoccupation with other matters. It is also possible to have knowledge of an object without experience of it, as when one is told what another mind has experienced, or when one infers the existence and character of an object which no one has ever experienced. Even in case of those objects which we say we have experienced, our knowledge ordinarily runs far beyond our experience, whether past or present. When I look at a chair, for instance, I say that I experience the chair. But what I actually experience is only a very few of those elements that go to make up the chair, namely, that color which belongs to the chair under these particular conditions of light, that shape which the chair displays when viewed from this angle, *etc.* I am able to know the chair only because my mind can supplement this immediate experience with the experience which was undergone in many other situations vastly different from the present one with respect to time, place and causal conditions. Also, in most cases, my

knowledge of the chair is further supplemented by knowledge gained from other minds, based upon orders of experience which have never befallen me.

So we must distinguish between: (1) experience as a process taking place at a certain time, within the bounds of a certain place and under certain causal conditions, one of which is a sensitive organism; and (2) experience as that which is known to have occurred, or known to be about to occur, or known to be that which would occur if certain temporal, spatial and causal conditions were provided. We shall ordinarily use the word experience to designate number (1), while knowledge will indicate number (2). The process of experience is limited to a certain time and place and to certain causal conditions; knowledge of that process is not limited to any particular time or place or causal conditions. Knowledge surmounts time, place and cause. Knowledge is the gathering up of experience into a region where the thief of time does not steal and where the moth and rust of place and cause do not corrupt. The unique characteristic of mind, which we wish to make plain, is precisely this: Mind is knowledge and hence is not limited by time, nor place nor cause.

Many objections might be raised to the statement that knowledge is super-spatial, super-temporal and super-causal. But we believe that all these objections arise from one or other of two misunderstandings. There is first the misunderstanding that arises from confusing experience and knowledge; second, there is the misunderstanding that arises from confusing knowledge with error. Let us take up these misunderstandings in order.

Experience and knowledge are confused because of the ambiguous character of consciousness. Consciousness is partly process of experience and partly knowledge. For the extrovert consciousness is chiefly experience; for the introvert it is chiefly knowledge, but it is always both to some degree. Because of this fact, whoever identifies mind with consciousness will confuse knowledge and experience. Consciousness, in so far as it consists of experience, is shaped by time, place and cause. In so far as it consists of knowledge it is independent of time, place and cause. But mind, as knowledge, is much more than consciousness. I know much more than that of which I am immediately conscious at this moment. Whatever may be one's theories of subconsciousness, knowledge is a word which refers to much else besides that which is at the focus of consciousness. Mind is that which includes all that a man knows. Mind as knowledge is not subject to the temporal, spatial and causal conditions of consciousness.

The second misunderstanding arose from confusing knowledge and error. Knowledge is truth. Erroneous knowledge is not knowledge at all. Error is subject to time, place and cause. Truth is not. Truth is that portion of reality which is known. Truth is not affected by time, place or cause; but there are three things which appear to be changes of truth. These three are: (1) true knowledge may cease and error take its place; (2) error may cease and knowledge take its place; (3) further knowledge may be added to that already known. In none of these cases is knowledge changed although lack of clear distinctions may lead one to think so. When knowledge ceases and error takes its place we have a diminution of mind, for mind is knowledge and where knowledge is not mind is not. It is true that we say a mind is in error. But mind in error is mind not by virtue of the error, but by virtue of whatsoever approximation to truth that mind may have; for mind may be more or less fully mind. Error itself is a word that refers to that which more or less remotely approximates truth. It is that which aims at truth. Mind is identical with that which knows. To know is to be identical with truth and truth transcends, by comprehending, time, place and cause. Hence mind is super-temporal, spatial and causal.

In case of error changed to truth, we have something which does not apply to our present position because error is not knowledge. Error is subject to time, place and cause and generally is error precisely because of that fact. But error is not knowledge, hence the case is beside the point.

In case of adding further truth to that already known there is no change of true knowledge. We have further knowledge added but no change in that already possessed. I may know a chair to have a certain color. When the character of the light is changed it reveals another color. My original knowledge is not changed. It is still true that under the conditions of light first prevailing, the chair bore a certain color and that truth can never be changed. Throughout all time it will be true that the chair in that particular situation bore that particular color.

So we conclude that mind, in so far as it consists of knowledge, has a timeless, spaceless, causeless mode of existence. Minds are associated with three levels of existence which may be called the physical, the organic and the rational. The process of experience appears at the organic level; but knowledge does not appear until we reach the rational level. Rationality is the ability to survey the experiences of other times and places and causal conditions than those in which the organism is now placed; the ability to survey the

experience undergone by other organisms; and finally the ability to reduce all these experiences to a single unity and know them all as one total object. This is knowledge. It is only at this level that mind is completely developed. Organisms experience, but they do not know. The physical and the organic are the foundations on which mind is builded, rather than mind itself.

To know other mind is to know not only a physical object, and not only an organism that experiences, but preëminently it means to know that which reasons, *i.e.*, that which surveys and unifies the experiences of different times, places and causal conditions into one timeless, placeless object of knowledge.

We do not pretend to have made an exhaustive statement of the nature of mind. We have simply stated those features of mind which it is necessary to have before us in order to deal with our real problem, which is how we know other minds.

II

The knowledge of an object, whether that object be a stick or a mind, is not immediately impressed upon the mind. An object is a certain order of experience; but one can never know an object if he knows nothing save the immediate experience. He must be able to know the order of experience in its totality, which means that he must know not only those elements which are now being experienced but also those which have been experienced and those which will be experienced in the future. To know the object which he is experiencing he must know what is that total unit of experience of which the immediate experience is but one small fraction. This total unit of experience is what we shall call the meaning of the immediate experience. To know a stick is to know the meaning of an immediate experience. To know another mind is also to know the meaning of an immediate experience.

Suppose I experience a strip of brownness against the side of yonder hill. What is the meaning of this brownness? Perhaps I say, at first, that it is a shadow on the ground. I then say that I have knowledge of a shadow. But I discover that I am mistaken. I next conclude that it is a discoloration of the soil at that point. Then I opine it is a snake. No, it is some dried leaves. Finally I ascertain it is a stick. This I do by the simple process of putting myself in those situations in which I shall have other experiences related to the original experience in such manner as to reveal to me what would be that total order of experience which would ensue if I placed myself in all conventional situations relative to the original brownness. That order of experience is the stick.

But the immediate experience which means stick may also mean tree in so far as it is the fragment of a tree. It may also mean hurricane if it has been cast to the ground from a tree top by a hurricane. It may also mean fire and warmth if it can be used to kindle a fire. But most significant of all, it can also mean other mind. Let us illustrate this.

As I observe the stick I may note that it moves back and forth. It is the wind, I think, which causes it to sway. But suddenly to my surprise I may discover that the movements of the stick describe the signals of a code with which I am familiar. The stick is signaling a message to me which I understand. It is signaling the question: Do you know me? I am now sure that the stick means not only stick but also other mind. I approach and find that the stick projects above an embankment. I come nearer still and find that, lying behind the embankment, and holding one end of the stick, is my friend who laughs up at me and enjoys my surprise.

I say I see my friend beneath the embankment. But what do I experience? I actually experience certain sensuous qualities in a certain situation which have a dual meaning, just as the brownishness had a dual meaning. The brownishness meant stick and also other mind. These new sensuous qualities mean human organism and also other mind. Human organism is not necessarily mind any more than stick. If mind had expressed itself to me through certain kinds of sticks as commonly as it had expressed itself to me through human organism, I would recognize mind in the stick quite as readily as in the flesh. To be sure there are many reasons why human organism is better adapted to express mind than a stick. It is highly probable that our instincts are so adapted to the human organism that we are much more attentive to it than we can naturally be to sticks. Also the human organism, by reason of its capacity for vocalization and gesticulation of all sorts, is better adapted to the making of symbolic signs. But the principle still holds that human organism is not the criterion of other mind. Neither do we know other mind by reasoning on the analogy that since I am a human organism and also mind, that other human organism is likewise a mind. Neither do we know other mind by an instinct which recognizes a human organism as the embodiment of mind. There are, of course, instincts that cause human organisms to associate with one another. But association of human organisms does not necessarily involve mutual knowledge of minds.

It is symbolism that reveals other mind. The reason symbolism reveals other mind is because it reveals knowledge which is independent of the time, space and cause of the immediate situation;

and mind is precisely knowledge that is independent of the time, space and cause of the immediate situation. Symbolism surmounts time and space because it introduces into the immediate situation meanings which can not become objects of immediate experience except in situations which are far removed in time and place and cause from the immediate situation. Symbolism introduces us to a timeless, spaceless, causeless state of existence, or nullifies time, space and cause, by flooding the immediate situation with foreign meanings. When a symbolic object floods the present situation with foreign meanings it expresses that which transcends the present situation. That which transcends the temporal, spatial, causal conditions of the present situation is precisely mind. In so far as any object, through symbolism, reveals knowledge of that which is inaccessible to immediate experience, it reveals mind, because mind is knowledge of that which is inaccessible to immediate experience.

We said that the stick might mean tree, fire and hurricane as well as stick; and yet no other mind was involved. But in that case the stick symbolized the meanings of my own mind. The stick was simply the symbol by which I kept in consciousness, or brought to consciousness, that which I myself knew. Of course the stick might be a means by which I discovered further knowledge which I had not theretofore possessed, but in that case the stick would not be a symbol at all and we are now considering the stick only as a symbol. The symbolism of the stick always expresses mind, although it may be my own mind which it expresses. How one distinguishes between his own mind and that of others we shall consider at once.

That portion of all possible experience which each mind undergoes is different from that of any other mind. Differences in constitution of the organism, differences in the sense organs, differences in the time, location and causal conditions in which the organism is placed when the experience is undergone, all conspire to render the process of experience, which each mind undergoes, distinctly different from that of every other mind. Hence that knowledge which constitutes my mind is different from that which constitutes another mind. When I am introduced to knowledge, a timeless, spaceless totality, which is different from that which constitutes my own mind, I am aware of other mind. No objects are more readily distinguished from one another than minds because none are so different from one another. The complex diversities of those total systems of experience that make up minds are more different from one another than those fragments of experience which constitute non-mental objects. We know other minds in the

same fashion that we know our own and we know our own, oft-times, no better than we know other minds. The symbolism which floods the present situation with foreign meanings brings to our consciousness a mind. This mind may be either our own or another. Which it be is readily discerned.

Minds are constantly undergoing both mutual assimilation to one another and also diversification from one another. They assimilate one another in so far as they, by means of symbolism, communicate to one another that timeless, spaceless knowledge of experience which constitutes each. Thus minds comprehend one another. But they constantly diversify in so far as the process of experience which each undergoes is different.

So we conclude that to know other mind is to know a total order of experience which, as process of experience, underwent time, space and cause, but which, as knowledge, exists in a timeless, spaceless, causeless unity. Such a unified totality, transcending time and space, can make itself known as such to other mind by means of symbolism. Symbolism serves to flood the immediate situation with meanings which can be objects of immediate experience only at remotely distant times and places and under other causal conditions. Hence symbolism in a sense surmounts time, space and cause and reveals that knowledge transcending time, space and cause which is mind.

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BOOK REVIEWS

Eastern and Western Cultures and their Philosophies. LIANG SHU-MING. Shanghai. 1922.¹

Those who are familiar with contemporary China know that there recently has happened something known as the "New Culture Movement." To those who fear nothing but change and those who, as Bertrand Russell said, take "moralization for philosophy," this movement is thought to mean the complete destruction of the ancient Chinese culture, and therefore is too radical. But, in fact, it means an evolution rather than a revolution of the Chinese culture. The "new" culture movement may be, after all, simply the self-consciousness and self-examination of the old. Mr. Liang's book is the first conscious and serious attempt to grasp the central

¹ The page numbers referred to in the following are based on a copy of the preliminary Peking edition. There is no English translation.

idea and to show the excellences and the defects of the old Chinese culture in comparison with the European and the Indian.

William James said that every great philosopher has his own vision, and that if one gets that, one can easily understand his system. This is Mr. Liang's method in treating the different types of the world culture. To Mr. Liang the fountain of life is the ever struggling and never ceasing Will. All peoples have this Will but every people has its own direction to lead it to. There are three possible directions:

1. To struggle to get what we want; to try to change the environment in order to satisfy our desires.

2. Not positively to solve the different problems of life, but to find satisfaction in the given situation; not to realize but to harmonize our desires.

3. Not to solve the problems, nor to leave them unsolved, but to try to get rid of the desires that cause them.

Proceeding along these three different directions and using these different methods, the European, the Chinese, and the Indian peoples work out independently their respective cultures, which, according to Mr. Liang, are but moods of life. Thus the fundamental spirit of the European culture is the realization of desires; that of the Chinese is the harmonization of desires; that of the Indian is the negation of desires (pp. 62-72).

Since the European mood of life is to struggle forward, the European culture is characterized by ability in controlling nature, the scientific method, and democracy in the sense that each and every individual claims his own *right* to oppose authority. These are its excellences. With them side by side come its defects. There is too much intellect, calculation, and self-assertion along with selfishness. The individual stands in the centre of the universe and treats everything outside of him as either material or rivals. Means is for the end; present for the future. There is too much to do, but too little to enjoy (p. 232).

The Chinese mood of life, of which Mr. Liang chose Confucianism as the representative, is just the opposite. Its fundamental idea is to repudiate calculation and intellect. It teaches not doing for something, but "doing for nothing." Following natural feeling, or what Mr. Liang called intuition, a mother loves her baby, and a baby loves its mother. This love is not means for the future, but the end in and for itself (pp. 174-176).

Confucius also said: "I have no course for which I am predetermined and no course against which I am predetermined." This means that one must not make any foregone conclusion and not

insist on one reasoning. If one holds one reasoning and does not admit change, one has to push to the extreme and thus miss the mean. For instance, if one adhere to the doctrine of universal love, like Jesus, one has to love one's enemies and, like Buddha, to refrain from killing any animal. Furthermore, one must not destroy anything in this world; there is no reason to stop midway. But, according to Confucianism, since by nature one loves one's parents more and others' less, so ought one to. The degree of one's love of different people ought to be different, because towards others in one's intuition there is a different intensity of love. To Confucius, it is wrong to insist beforehand on any objective, changeless doctrine, but right to follow one's natural feeling and let it go (pp. 160-161). These aspects of Confucianism are included in the conception of *Jen* (this Chinese word is often translated "benevolence" but is more than that). *Jen* means the sensitiveness of the natural feeling or intuition and the pursuit of it without calculation of the consequence or reasoning about a general rule. Thus life is not dependent upon what is without, but upon itself. So there can be neither gain nor loss. There is always joy, but never sorrow.

As the European people have too much calculation, the Indian have too much insistence. The Indian people want to get rid of the problems of life, because they want to seek a fundamental solution of them. They want to solve problems that are unsolvable. Life itself is a flux, but they worry about its uncertainty and change. They are too sensitive to the affairs of life, so they fall back to the complete negation of it (p. 135). So the Indian mood of life, of which Mr. Liang chooses Buddhism as representative, is to try to return to the state of pure sensation or pure experience. According to Mr. Liang, in pure experience there is no change and distinction. In pure experience every impression of a flying bird is a motionless image. It is our feeling that connects these successive images together and puts them in motion. In pure experience there is no distinction between object and subject. It is our intellect that makes this sharp demarcation and antithesis. If we return to the state of pure experience, we shall have knowledge of nothing. There is real eternity, since there is no change. There is real One, since there is no distinction. This is Absolute. This is Wisdom (pp. 108-112.)

These are the salient points of the three types of the world's culture as Mr. Liang sees them. Mr. Liang advises the Chinese people to accept completely European sciences and to resume critically the Confucianistic attitude towards life. He also sees that the European's life of calculation is near its end and that the Western people are bound to change their way and to follow Confucius. But

that is not all. There must be a time when mankind will become very sensitive to the unsolvable problems of life such as death, old age and sickness; they will then begin to appreciate the Indian culture and to adopt it. In fact, the three cultures, according to Mr. Liang, represent the three successive stages of human development (pp. 259-263). But since science, as Mr. Liang points out, is an organic part of the Western individualistic and utilitarian mood of life, how can it be combined organically with Mr. Liang's Confucianism? Science for science's sake; we may invent science for nothing; but it is through and through a product of pure intellect. A life of feeling and intuition is for art, not for science. I see quite clearly that Confucianism is possible for science, but not the Confucianism of Mr. Liang's interpretation. Mr. Liang's Confucianism presupposes too much the pre-existing harmony of man's feeling and the goodness of man's nature.

Mr. Liang considers Bertrand Russell's appeal to man's instinct of creation as an indication of the fact that the Western peoples are going to assume the attitude of "doing for nothing." I may also say that Professor Hobhouse's "rational good" and Professor Dewey's "good of activity" are no less strong indications. Still I do not quite see why the Western peoples should adopt Confucianism completely and why future mankind should all be followers of Buddha. It seems that Mr. Liang, being always a student of Buddhism, has too strong a monistic preconception that leads him to suppose that the three existing types of culture have exhausted all the possible ways of life and that mankind is bound to take or reject one or the other as they are.

Since Mr. Liang's book is dealing with so comprehensive a subject matter and his prediction of the fate of the cultures is so far in the future, it is unnatural to expect that every one should agree with him. It seems to me that his interpretations of Buddhism and Confucianism are of interest and value, no matter whether Buddhism and Confucianism are really as he says or not. I think nobody can read these two parts of his book without being impressed by his originality and conscientiousness. Mr. Liang certainly has his vision. This is enough for a philosophical work to justify its existence.

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JOURNALS AND NEW BOOKS

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NOTES AND NEWS

The Annual Meeting of the American Psychological Association will take place at Cambridge, Mass., December 27, 28 and 29. The sessions will be held in Emerson Hall, Harvard University.

Papers of general and theoretical import will be placed in the sessions on Wednesday, December 27. The business meeting will be Wednesday evening. The sessions of Thursday will include a symposium arranged by Section I of the A. A. A. S. and the address of Professor Bott, the retiring vice-president of Section I. The annual dinner of the Association followed by the Presidential address and smoker will be Thursday evening. Friday will be devoted to sessions of the Section of Clinical Psychology. In the afternoon, the session will be at the Boston Psychopathic Hospital.

Abstracts, not exceeding 400 words and written in triplicate must be in the hands of Professor Edwin Boring, Emerson Hall, Cambridge, Mass., by November 8th.

A joint meeting of the Eastern and Western Divisions of the American Philosophical Association will be held at Union Theological Seminary, New York City, December 27, 28 and 29. Professor John Dewey will deliver the Paul Carus Lectures on the attempt to apply a theory of experience to certain metaphysical problems.

The afternoon sessions will be largely devoted to the lectures by Professor Dewey, and the morning sessions to the reading and discussion of papers offered by members. On Wednesday and Thursday evenings respectively, the smoker and annual dinner will be held, and at these times also addresses by the presidents will be delivered.

Abstracts of papers should be in the hands of Professor G. A. Tawney, University of Cincinnati, Cincinnati, Ohio, not later than November 10th. The papers offered should be limited to twenty minutes in reading.

THE JOURNAL OF PHILOSOPHY

THE GROUNDS OF PRESUMPTION¹

THE note of pure skepticism, not mistakable for denial, has always been more distinct in English and in Scotch philosophy than it ever was in German philosophy either before or after Kant, or in French philosophy before or after Comte. In Hume it became dominant, and not for the last time. In Balfour, in 1879, it became the theme of the composition.

A Defense of Philosophic Doubt never had the vogue it deserved, or the consideration which, for the clarification of the human mind, it should have received. It got a bad name at the start, as an attack on inductive science, in particular on evolution, which it was not; and as an apology, which it was not, for the *Thirty-nine Articles*. For the first of these misapprehensions, incompetent reviewing and inattentive reading were to blame. For the second, the author himself was to blame because, inadvertently or unwisely, he used throughout the words "belief" and "faith," colorful with religious connotation, when he should have adhered to the white-light philosophical terms, "assumption," "certitude" and "presumption."

In part, however, the disappointing influence of the book is attributable to the circumstance that it soon went out of print, and for forty years was almost unobtainable. Meanwhile, the tide of ideas ran swift, if not always deep, and threw up a resounding surf. It required moral courage to reissue the *Defense* without other revision than trifling verbal alterations and a few notes, made a long while ago. This was, however, the right thing to do. It saved a significant bench mark from obliteration.

Lord Balfour's major thesis is that not only all speculative philosophy but also all inductive science, observational or experimental, and all historical inference, rest upon assumptions that are unproved and unprovable. These assumptions he calls "ulti-

¹ *A Defence of Philosophic Doubt: Being an Essay on the Foundations of Belief*. By Arthur James Balfour, F. R. S. Member of the Institute of France: Honorary Fellow of Trinity College, Cambridge. A new edition. London, Hodder and Stoughton, Ltd. 1921. Pages x+355.

mate beliefs" and "grounds of belief," using the two expressions interchangeably. He identifies them with "self-evident propositions" (page 4) and tells us in italics that among the "full 'differentia' of ultimate beliefs" is the fact that "we require *no grounds for believing them at all*" (page 7). Grounds of belief are always to be discriminated from the causes, or antecedents, of belief. "The enquiry into the first is psychological, the enquiry into the second is philosophical" (page 5). "It is strictly impossible that any solution of the question 'how come I to believe this' should completely satisfy the demand 'why ought I to believe it'" (page 6). "The business of philosophy is to deal with the grounds, not the causes, of belief" (page 5), but not, of course, to attempt to prove them (page 8). However, "if philosophy is neither to investigate the causes nor to prove the grounds of belief, what . . . is it to do?" Its business, as Lord Balfour apprehends it "is to disengage" the grounds of belief, "to distinguish them from what simulates to be ultimate, and to exhibit them in systematic order."

Demonstration of this thesis is undertaken through a searching and extraordinarily acute examination of empirical logic as set forth by Mill; of the theory of historical inference; of Kantian transeendentalism as restated by Caird; of the argument from general consent, the argument from success in practise and the argument from common sense; of psychological idealism (Berkeley); of the test of inconceivability (Spencer); and of Mr. Spencer's proof of realism. Not many conscientious readers have survived these pages with unseathed doubt that all systems of thought, empirical no less than *a priori*, are built upon unproved and unprovable assumptions.

But tangled up with Lord Balfour's major thesis are minor theses, each of which has crept in as pure assumption. One of them he obviously believes, and would defend. Whether he believes any of the others I am not sure. I am not even sure that he meant to present them. I am sure only that he has neither proved nor eliminated them.

Most obtrusive of these unproven but not eliminated theses is the assumption that in self-evident propositions we find certitude. The inattentive reader probably carries away an impression that Lord Balfour holds this assumption to be true, but I find no incontestable evidence that he does. Somewhat less obtrusive is the assumption, which Lord Balfour unquestionably does believe, that the grounds of belief are themselves beliefs. Least obtrusive, but neither insignificant nor unimportant, is the assumption that the grounds of belief are equivalent to reality, or may be identified with it.

It is precisely upon the issues presented by these assumptions, or minor theses, that philosophy has been engaged throughout the years since the *Defense* was written. The product of criticism and restatement is not inconsiderable. We have a new general philosophy of relativism, and three particular varieties of it, namely, a new logic, a new pragmatism, and a new realism. Over against these we have a new absolutism.

The new relativism has conditioned our self-evident truths. It denies that things which are equal to the same thing are necessarily equal to each other eternally, or that parallel straight lines are necessarily parallel to infinity.

Lord Balfour will, of course, object that if these denials are empirical they are invalid. Einstein and the astronomers could not perturb him. But the new relativism is not bounded by empiricism. It compels us to ask, and, if we can, to answer the question, "To what intelligence is a self-evident proposition equivalent to certitude?" The only answer we can make is, "To an infallible intelligence," and human intelligence is not infallible. So there we are. Our grounds of belief, our ultimate assumptions, are not certainties. They are presumptions only.

Moreover, they are not beliefs. The grounds of presumption are no more beliefs than the grounds of the validity of a contract are beliefs. The grounds of the validity of a contract are the conditions attached. If these are present and fulfilled the contract holds; otherwise it does not. The grounds of presumption are the conditions present and attaching to assumption. They are the adjectives, not the substantives of assumption. They only can convert assumption into presumption.

There are four imperative conditions of presumption, and three of them are adjective factors of self-evident belief. There is no discovery here, unless, possibly, to minds, if there are such, unaware that the self-evident *can* be factorized, and that *no one* factor is adequate. Each of the four conditions at one or another time has been isolated by one or another philosopher as a test or criterion of ultimate truth. Lord Balfour has not overlooked or ignored any. *Seriatim* he has mercilessly scrutinized each and, in its isolation, discredited it. But he has not seen, at least he has given us no occasion to suspect that he has seen, that any one of the four enters as an adjective factor into the self-evident.

To name the adjective factors of the self-evident is presumably enough to obtain recognition of the subsistent relation affirmed. No one whose attention has been called to it is likely to deny it. They are, then, the *insistent*, the *persistent* and the *consistent*.

Nobody calls a proposition self-evident unless it forces itself upon consciousness uninvited. It is intuitive. Nobody calls a proposition self-evident unless, as Spencer, with unnecessary urgency, contended, it persists in consciousness in spite of efforts to evict it. And nobody calls two or more propositions self-evident if they contradict one another.

How, then, can we say that the self-evident is unconditional? And if we admit that it is conditional do we not admit both that the self-evident can be factorized and that its factors are the grounds of its presumptive truth? If so, Lord Balfour, in saying both that the grounds of belief are self-evident propositions, and that we require no grounds at all for believing them, has fallen into the language of contradiction.

The fourth condition of presumption is best approached through further observations. The new logic has not been content with sharpening the edges of categorical discrimination and following the lure of quantification until logic and mathematics have been exposed as one identity masquerading as two demons. It has explored the realms of causation as intrepidly as Mill did and has made a better triangulation than his. The old base lines, "antecedent," "consequent," and "condition," have been abandoned, and the once outstanding peaks, "a cause" and "the cause" appear with diminished altitude. Each is seen now as one factor only of a situation, and "the" is held to mean only relative size, or other importance. A situation conceptually factorized, conceived in terms of its factors, a wood thought of as trees, is thereby logically resolved, the new logic says, into its causes. The factors conceived as integrated, the trees thought of as a wood, are thereby converted logically, the new logic avers, into their effect. Actual (phenomenal) causation is a kinetic process of integration. The cause of a dynamic situation is the kinetic integration of its static and kinetic factors.²

Moreover, the distinction here made between causation logical and causation phenomenal is conceptual only. It has no dynamic existence, a fact so nearly "ultimate" that Lord Balfour might have been expected to take notice of it. He has not adequately done so. His contention that philosophy has to do with the grounds of belief only, and not with the causes of belief he has thrown into relief by ignoring the question whether or in what way causes and grounds are related.

As now conceived, causes and effects are not only equivalent, (they have always been held to be that) and all causes are or have

² Cf. the chapter on "Order and Possibility" in Giddings' *Studies in the Theory of Human Society*, 1922.

been caused (this also, with reservations as to a First Cause, has always been held) but also, effects are not terminal points. Now, this last assumption, oddly, has not always been held, at least not always held in mind. Certain states of mind, and self-evident truths preëminently, if not actually thought of as akin to nirvana, have been dealt with in philosophical discussion as if they were. Yet logically they are not, as, certainly, they are not dynamically. All states of mind, including contemplation, are reaction states, and all, including contemplation, react both logically and dynamically. Insistence, persistence and consistence, therefore, the grounds of presumption, resolve into causation. However, the grounds of assumption (or belief) and the causes of assumption (or belief) are not identical throughout the whole extent of causation. Not all causes of assumption are grounds of assumption; morons unhappily (and notoriously) make assumptions; but all true grounds of assumption are causes of assumption.

We here arrive at the new (or, should we say, at the newest) pragmatism. The grounds of assumption do things. They cause or participate in causing presumption. Presumptions, in turn, cause, or participate in causing further assumptions, conclusions, beliefs, what you will. Pragmatism has seized upon this aspect of assumption. It has taken doing, working, productiveness as its ground of belief.

Carefully defined, productiveness is a ground (one ground) of presumption, but the careful definition is imperative, and the limitation to one plot of ground in four is not removable by logical conveyance. Insistence, persistence and consistence can neither be conveyed nor eliminated, nor, if they seem not to bear fruits of esthetic or moral value, be condemned as unproductive (as the withered fig tree was), unless we are prepared to say that it makes no difference whether the product of presumption is truth, error or obfuscation. If what we demand is truth and more of it, the product of presumption must be a body of truths that hold together. Presumptions must work as working hypotheses that work out. In a word, the product of presumption must be not values, which William James, unhappily, and too many of his earlier disciples were never able to eliminate, but philosophy and science. The whole matter has been put as clearly and tersely as it probably ever will be, by Lord Haldane, who says, "The gap in the foundations of the old beliefs has been largely the result of reflection, and it is not by the stimulation of emotion, but only in further reflection, that there can be hope of filling it up."³

³ *The Reign of Relativity*, page 4.

All this means that assumptions which, being causes, as they necessarily are, of further assumption, are acceptable as presumptions only if the new truths which they yield us are, like our older presumptions, persistent and consistent and resolvable into truths that are insistent. It means further, that each new crop of philosophical and scientific products indefinitely must so qualify, and that all of them must be consistent with the old ones. And this is to say that they must be *projective*. They must be points of a curve, the equation of which is constant. They must be components of a body of coherent truths, insistent, persistent and consistent, throughout the whole extent of experience, past and future.

Accordingly, the fourth ground of presumption is *projection*, which may be defined as consistent philosophical working throughout the range of experience, past and future. As working hypotheses presumptions must turn out to be convertible into both new abstracts and new concretes: new conceptions and new perceptions. This brings us to the new realism.

The old realism was a bootless attempt to eliminate concreteness from reality and to identify reality with abstraction or the abstract. Its merit was that it was an attempt to arrive at consistency. Is color real? No, Lord Balfour says, following the older notions, because it is only a sensation produced by the vibrations of material particles and "the smallest trial is sufficient to convince us that to represent in imagination *uncolored* vibrating atoms is a task altogether beyond our powers" (page 249). Is a lump of ice real? No, because it melts into water. Is water real? No, because it becomes a cloud of steam. Is the cloud of steam real? No, because it disappears in invisible vapor. So, by negation of the negation *ad infinitum* reality became the non-phenomenal. Thence, *facilis descensus*, it became the absolute, the unknowable.

But step by step with this evolution grew relativism, and relativism became katabolic. Without pretending that we could get rid of the unknowable, we balked at the absolute, and turned impatiently from nirvana. Without asking ourselves why, or on what grounds, we first refused to think of reality as the statically persistent, and then permitted ourselves to think of it as the persistently kinetic, the kinetically persistent, the ceaselessly carrying on and producing. Then neo-realism, actual and unabashed, set about self-justification.

Assuming that the old realism had tried most, if not all, of the possible ways of going wrong, and that the error of each lay in exclusion or denial, the new realism turned to inclusiveness. It affirmed that the concrete is real, no less than the abstract. The ice

is real, but as ice it is not total reality. The water and the steam are real, but neither is complete reality. Nor would an infinity of equivalent modes, forms, or manifestations be the whole of reality. There is also the relation of one form or mode to another, throughout the series, and the relation of this relation to the totality of relations, and these relations also are real. Or, to put it all now in other terms, reality is total experience and more. It includes past and future, actual and possible experience and more. That, at least, is how we have to think about it, because we have been driven to assume that all experience is real, in some sense or way, but that we do not know, and may not presume, that human experience exhausts reality.

It follows that conceptions (abstractions) are convertible into concretes (perceptions) and that these, in turn, are convertible into new conceptions, and so on indefinitely. Reality, therefore, to summarize all this in a formula, is not merely a (a concrete) or merely p (an abstraction), or merely x (an unknown): it is $x(a\ p)$, and $x(a\ p)$ must be convertible into $x(b\ q)$ or into $y(a\ p)$ or into $y(b\ q)$.

So, at last, we are brought through these developments of relativism to a corrected view of the nature, functions and relations of philosophy, logic and science. Distinctions are clarified.

Philosophy is concerned with the grounds of presumption, and with ultimate presumptions. Its business is to bring our assumptions, beliefs and faiths face to face, and let those survive that can. The survivors we may not accept as certainties, but we may accept them as presumptions. The strength of presumption increases as the death-rate of beliefs rises.

While philosophy may not confound itself with religious faiths or with esthetic or moral values, nor lose itself in them, it should not ignore them nor let them alone. All of them build upon presumptions. These presumptions philosophy should scrutinize, and pronounce them philosophically valid or invalid, as impartially as it judges the presumptions underlying inductive science. The grounds of judgment are the grounds of presumption which have been considered.

The business of logic is to scrutinize conceptions, and bring about consistency among them. The business of science is to bring about consistency between conceptions and perceptions, between inference (or deduction) and observation.

The new absolutism that has developed in the face of the new relativism has not been so much a product of philosophy, as here defined, as of mathematics. The new mathematicians are adventur-

ing where philosophers now hesitate to tread. I have commented upon their venture in an earlier volume of this JOURNAL.⁴

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MEMORY: A TRIPHASE OBJECTIVE ACTION

DEPLORABLE it is that the commendable enterprise of attempting to study the facts of psychology in an objective manner has not developed without regrettable aspects. To mention only one of the unfortunate conditions, why should it be necessary, in order to be objective, to reduce complex human behavior to extremely simple processes? Such a reduction we find in the description of memory as simple habit actions. Accordingly, we attempt in the following paper to make an objective analysis of memorial behavior without transforming such activity into simple processes easily described but not actually constituting a part of human behavior equipment.

I. THE NATURE OF MEMORY REACTIONS

Memory reactions constitute those delayed or postponed responses to stimuli in which (1) the adjustment stimulus is no longer present when the response is made and consequently must be substituted for; that is to say, a substitute stimulus-object or condition must serve to call out the delayed reaction or response phase of the memory behavior, or (2) the stimulus object itself must again be available after some absence. In the latter case, although the absence may be an exceedingly brief one, we must still look upon the effective stimulus-object as a substitute for the adjustment stimulus which in this instance may be the same object but in a different temporal setting.

More definitely may we characterize memory reactions by referring to them as suspended or continuous reactions. Probably the latter description is much more to the point. The fundamental characteristic of true memory reactions is that they start at some period of time, pass through another time interval which is a less active or suspended stage, and are finally brought to completion in a third and active stage. Or when this last part of the reaction does not occur we have the opposite fact, namely, forgetting. The main emphasis in all cases, however, is on the fact of temporal con-

⁴ "The Method of Absolute Posit," this JOURNAL, Vol. XIV, No. 1, January 4, 1917.

tinuity, although there is a period of indiscernible action in between the two more active phases. The emphasis on the continuity of memory reactions is made, first, because there is a period of apparent non-action before the final phase of the memory act is executed, and secondly, because we are dealing with the actual behavior of a person covering a period of time. Consequently the phases or partial acts might erroneously be considered as being independent discontinuous activities. That a memory behavior segment is a single continuous action no matter how long a time is required for its transpiration is clear when we agree that memory reaction begins at the moment we make an engagement with someone to meet him at a definite time and to end when we actually do meet him at the appointed time and place. That is to say, the memory action goes on from one period to the other.

We find it exceedingly helpful if we study memory reactions as the concrete actual responses of persons. For one thing, it enables us to see how it is possible for a person, who, although he does other things at the same time that he makes an engagement, and also while keeping it as well as in between these two points of time, is no less continuing the identical memory activity throughout the whole series of time periods. Is not the situation very like the case of a person who is going somewhere but who in the same time interval can greet a friend on the way? The hypothesis of the temporal continuity of memory action is rather strengthened than weakened by the analogy between these otherwise very different sorts of behavior when the person can actually stop to chat with his friend.

While we naturally choose for illustrative purposes types of memorial behavior which lend themselves advantageously to the presentation of our conception, we still insist that the case of memory stands no differently when we consider informational reactions rather than grosser sorts of behavior. Here we must be more careful, however, to avoid mere language habits or informational learning, which are quite different sorts of phenomena from memory action, as we will presently point out.

A memory reaction, it follows then, can not be studied and understood unless we consider the action from the standpoint of all of the time periods involved. Of these time periods we may observe the distinct existence of three, namely, (1) the inceptive, (2) the between stage, and (3) the consummatory stage. To these three time units there correspond three phases of a unit action, to wit, (1) the projection or initiatory phase, (2) the middle phase, and (3) the recollective or consummatory phase. The middle phase, be-

cause of its relative invisibility and submerged operation we may practically neglect although it is a genuine phase of all memorial behavior. In general descriptions of memory we disregard the middle phase although it is presupposed in both the projection and recollective phases. Accordingly, the brief examination of each of the two end phases will in our opinion not only reveal evidence that a memorial behavior segment requires for its operation a definite time interval, be it minutes or months, but also that memory consists of a single triphase continuous action.

Whenever we start a memory reaction it is invariably implied that the behavior initiated shall be continued or suspended until some specified posterior time. The immediate act is initiated in order that some related action should occur. We make engagements in order to keep them; we memorize in order to recite after some longer or shorter intervening time interval.

Furthermore, the intervening phase of action which superficially appears as no action whatever must in fact be looked upon as a positive mode of psychological adaptation, since the memorial behavior necessitates this interval between the initiation of the action and its final consummation. A moment's reflection regarding the inhibition of reaction is a convincing argument of the positive actual character of the suspended phase of memorial behavior, and here the consummatory phase of the action is only temporarily inhibited or postponed. After signing the contract the waiting of ninety days to pay the amount nominated in the bond is very much a part of the total memory action involved.

When the final or completion phase of a memory behavior segment operates, its mode of action is conditioned by and implies the functioning of the middle phase. The final action must occur only after a suitable given period which is conditioned by the stimulating circumstances of the entire action. Not only are the two terminal actions incomplete and insignificant unless they are inextricably intercorrelated, but they must also be in the same manner tied up with the middle phases. In fact, while the three phases appear as morphologically distinct they are not so functionally at all.

Another important point for the understanding of memorial behavior and one which argues for the continuity of such reaction is the fact that memory reactions involve very close connections between specific responses and particular stimuli coordinated with them. A given stimulus must call out directly a specific name or a specified act of some non-verbal sort. No substitution of response, no new act not previously begun and postponed may now occur or we are not remembering or are remembering faultily and ineffec-

tively. With respect to directness or connection between stimuli and responses, memorial behavior differs from thinking (another type of delayed behavior) in which the action, when it occurs, may be indefinitely determined by an anterior trial and error procedure.

To the important points which we have just made concerning memory behavior segments, namely, that they operate between two definite end time points, and that throughout this time a particular coördination of stimulus and response is operating, we may now add a third point, namely, that the time through which the continuous action operates may be more or less prolonged. That is to say, even when memory reactions are intentionally projected they may operate finally only after some indefinite time period. This situation is illustrated by the person who is memorizing some material for an examination although he is not fully informed as to when that examination is to take place.

There remains now to point out, that what might appear plausible enough in discussing the continuous or postponing character of memory reactions, when such delayed behavior is taken to be a final reaction (that is, when the memory act is the adjustment or adaptation in question) may equally well be true when the memory act is precurrent to another act. In other words, even when the memory action is only preliminary to some other act, the postponed or continuous functioning is an integral feature of the total behavior situation. This point is really very important for it illuminates greatly the general character of memory behavior. It is well to appreciate the fact that memorial reactions constitute definite types of psychological behavior in the sense that the memory act may be a preliminary recalling of information upon which further action is based or it might itself be the complete adaptation as in reminiscence. In this connection it may be well to point out that, once the second active phase of a behavior segment is operating, the additional problem arises whether there will be a forward-looking result or merely a backward-looking one, that is, one that merely refers back to or repeats the projection stage of memory.

Corresponding to the precurrent and final character of memory reactions are the simple and complex characters of such behavior. Plainly, the precurrent reactions will be by far the simpler of the two types. In fact, the complex final memorial behavior segments may be replete with all sorts of component responses, many of which if functioning alone would be far removed from the description and name of memory behavior.

II. MEMORY BEHAVIOR CONTRASTED WITH OTHER TYPES

The fact that memory reactions are delayed and consequently require substitution stimuli constitute the essential criterion for distinguishing such reactions from, say, perceptual responses. But why contrast memory with perception? We answer, because it has been traditionally held that since in perceptual behavior we react to whole objects although we are in direct contact only with some phase or quality of them, that we must therefore have a memory reaction in each perceptual response. Now we hold that because of the complete absence in perceptual behavior of the continuous and temporally distributed features of memory action that the two are totally unlike.

We assume that the fundamental feature of perceptual responses is the fact that a specific differential reaction is called out by a specific stimulus-object or condition and that any changes in the stimulus-object or in its setting will bring about or result in some corresponding change in the perceptual reaction system. Of course, it is quite true that the reaction now made to a perceptual object is one that was built up in many cases to a whole object, only part of which now calls out the original response, but this in no wise involves any memory response. Tersely put, we do not ordinarily remember that the book we perceive has such and such features on the side we can not now see, although this contact with the book may involve, as in every other perceptual situation, definite memory behavior. That this observation is sound readily appears when we take the case of an orange or other particular object to which we react without ever having been in contact with it before. The act in this illustration is a perceptual act but can not be a memorial action because in the former case we are reacting to an object with a reaction system developed to these qualities (size, shape, color) present among others (taste, weight, texture), *etc.* Whereas in the case of memory the original object is not present at all but is substituted for. Moreover, in the case of memory we have a delayed or postponed reaction. Because memory depends upon a substitute stimulus the reaction is never exactly like a former one and gradually fades. Also, owing to the fact that a number of different absent objects may be reacted to simultaneously, our memory responses may be exceedingly unreliable. When faulty perceptual reactions (illusions) occur they are owing to entirely different conditions, although some imperfect perceptual reactions (hallucinations) may be accounted for on much the same basis.

Two types of facts are implied, therefore, in our conception of memory behavior. In the first place, we have no room in our de-

scription for the sorcerous reinstatement of mental states in the remembering mind through a mysterious association of ideas, a process usually made more mysterious still by means of various forms of imaginary neurology. And in the second place, we abjure the notion that memorial behavior consists of the mere fact of having a reaction system previously acquired, function later whenever the adjustment stimulus is presented. The latter fact is merely a general property or condition of psychological organisms and is the basis for all psychological responses and not merely of memory behavior. This reaction process that we have just been describing is a much simpler fact than that involved in memory and can not possibly be confused with the delayed or postponing of a reaction system. Let us observe then, that memory behavior can not be identified either with habit responses or with learning. For the former are behavior segments constituting closely integrated responses and stimuli; so that the appearance of the stimuli immediately arouses the correlated responses. Indeed, habits as characterized from the standpoint of promptness and immediacy of the total response are almost the opposite in type from memorial behavior.

Now, so far as learning is concerned, besides being merely a coördination of responses and stimuli, such a reaction is presumed to be a more or less permanent acquisition and the more usual condition is that it should be so, whereas memory is in a unique sense a temporal affair designed to operate for a specific period of time only. As a matter of fact, the rather unusual and universally acclaimed incompetent learning known as cramming answers much more to the description of memory than any other kind. Furthermore, whereas learning involves a single coördination between stimuli and responses, memory behavior comprises a special combination of adjustment and substitute stimuli with the given responses. Again, the coördination of learning responses and stimuli are presumed to operate periodically while memory reactions function continuously. We might say further that learning reactions involve much memory behavior and always do comprise some memorial operations, but they are not identical with memory reactions, for learning behavior includes many other kinds of reaction, for example, thinking, reasoning, perceiving, imagining, willing, *etc.*

Incidentally we may here enter a caveat against the assumption that memory responses represent elementary organic processes, very frequently nowadays referred to as mnemonic processes. Besides connecting memory with a very contentless abstraction, this assumption leads us to overlook the tremendously complex conditions which find a place in every memory situation. Almost any memory re-

sponse taken at random will indicate to us a large series of human conditions, adaptational needs and environmental stimuli, all of which in their combination and interaction play a part in the projection and recall phenomena of memory.

III. PROJECTIVE AND RECOLLECTIVE MEMORY

Throughout the whole series of thousands of memory reactions we can trace a functional difference which may be seized upon as a distinguishing mark to divide off memory reactions into two broad types which we will name (1) projective and (2) recollective memory, respectively. The first type is characterized by the fact that its operation depends primarily upon the response side of the stimulus-response coördination; that is to say, the initiation of the act depends to a considerable extent upon the needs and desires or other activities of the person. The second type, on the other hand, depends somewhat more definitely upon the stimulating conditions. Because of some intensity or strikingness of an event in which the person partakes, the memory activity is initiated and operates continuously. The extreme forms of this type of memory are those cases in which, because of a frightful experience, any slightly resembling situation brings to mind sometimes in a shocking manner the original event. Obviously, this distinction must be relative but in practise it is sufficiently observable to provide a criterion.

Another and even more relative distinction between projective and recollective memory may be introduced. We may separate them on the basis of an apparently more prominent operation of the initiatory and consummatory phase of the total behavior. In the one case (projective) the action appears to involve mainly the initiation or projection of a memory behavior, while in the other case (recollective), the important factor seems to be the recalling phase or what is popularly called the recollecting or the remembering. Naturally in each case both phases must be functionally equally present. Since we are dealing with continuous action, the apparent prominence of one or the other phase may be only seemingly a difference, but for purposes of classification at any rate, we accept the distinction as an actual practical difference in the memory behavior types. We proceed, then, to discuss the two types of memory action separately.

(1) *Projective Memory Acts*.—In this class we might consider two types (*a*) the intentional and (*b*) the unintentional projective memory response. (*a*) By intentional projective memory we mean the actions in which the person purposely postpones, suspends or

projects a response into the future to be later performed. As illustrations we might take the situations in which the person makes an engagement, or arranges to do something later, or memorizes some information to be used at a future date.

(b) By unintentional projective memory we refer to situations in which the person is not spontaneously involved in the memorial action; either he is disinterested or does it merely through the influence of a group convention, although the person himself and not the stimuli plays the predominant rôle in the total behavior segment. Typical of such memory reactions are the casual information behavior which involves acquiring memory materials by sheer contact with things.

(2) *Recollective Memory Acts*.—Under the rubric of recollective memory behavior we may include three types, namely, (a) casual remembering or reminiscence, (b) direct recollection, and (c) memorial recovery.

(a) By casual remembering we mean the kind of activity in which some unimportant and even obscure stimulus starts off a train of memory actions to absent things and events. The whole procedure is unconditioned by any need or necessity, but once the process is started it gains momentum and proceeds apace. Each recovered element serves to arouse a further factor. On the whole, the action is passive at the time and no special practical value accrues to the person, although it may be the source of no end of amusement or depressive uneasiness. That is to say, the ongoing of this activity may be of tremendous importance in the way of stimulating the person. So far as the surrounding objects are concerned, however, no change in them need be effected. Again, the whole procedure may be greatly facilitated by the relaxed and inactive condition of the person. We can not at this point refrain from mentioning again that the action represents a consummation of a stimulus and response connection previously organized.

(b) In direct recollection the need to have some information such as a name or event, or when we must recover a lost article, stimulates us to bring about the operation of a consummatory phase of a memory behavior. Here the primary emphasis is upon the recall for the purpose of achieving some practical result, although when the initiatory phase of the action was started there was no emphasis upon the person's participation in the situation. This type of memory is well illustrated by the recollection of a witness in a court trial, though in this particular case the memorial behavior may not result in any apparent direct consequences. The criterion, however, for this kind of memory remains the instrumental recollective one.

(c) Contrasting with the type of memory just discussed, memorial recovery represents the activity in which the consummatory phase of a memory reaction is made to operate primarily for the purpose of the action itself rather than to effect some change in surrounding objects. In memorial recovery the aim is to effect some change of condition in the person, the removal of a weight from one's conscience, as in ritualistic confession or in medical psychoanalysis. It was in connection with this capacity to live over experiences that Aristotle developed his theory of esthetic Catharsis.

IV. INFORMATIONAL AND PERFORMATIVE MEMORY ACTS

Implicit in our distinction of memory behavior just discussed as well as in the rest of our description lies another differentiation which we must bring to the surface. It is, namely, the distinction between memory acts which constitute some actual work to be done (performative) and memorial behavior which merely adapts the person to some past event or action (informational). In the latter case, the person may merely know something about past conditions. In some cases, of course, the information memory reaction may be a preliminary step to a future action dated from the time of the last or consummatory period of the informational memory behavior segment, but in this case we assume the new action to belong to a different behavior segment. The whole distinction which we are making hinges upon the functional character of the behavior segment in which the memorial action plays a part. Thus, memorizing might be considered as a memorial action midway between the informational and performative sort.

To a considerable extent we may use the distinction we have just made as a differentiation between memory in which we are definitely aware of the operation and purpose of the entire act (informational) and cases in which we remember without so definitely employing the memory activity to bring about a necessary or desirable further result (performative). It is only proper to say here that the informational memory may be considered as of the maximum degree of awareness while the performative memory can be so extremely lacking in awareness or intention that it fits the popular term subconscious.

V. HOW MEMORY REACTIONS OPERATE

The operation of memory responses consists primarily of the operation of the two more definitely observable of the three phases described in an earlier part of this paper, to wit, the initiatory and

consummatory stages. The first action initiates or projects delayed or continuous responses, while the second consists of the consummation of the suspended responses through the functioning of a substitute stimulus. This second process consists of the excitation of the delayed response by some stimulus-object or condition which operates in place of the original or adjustment stimulus and which calls out the response to that original stimulus. We may take advantage of this functional division of the memory behavior segment and discuss each phase in turn.

(1) *The Initiatory or Projective Phase.*—In general, this phase consists of connecting up three things, of organizing a tripartite association. This association connects up some act with an adjustment and a substitute stimulus. In different situations one or the other of these features stands out more prominently. For example, in some cases the association of the response with the adjustment stimulus is most prominent. This would be true in all cases where the delayed memory response consists of making an engagement (typical projective response). Again, in other cases the association between the adjustment and substitute stimuli seems to be most prominent as is true whenever we employ a mnemonic system, that is to say, when we remember the days in the month by verse. Here the verse constitutes the substitute stimulus and the days of the month the adjustment stimulus. In still other cases the connection between the response and the substitute stimulus appears most prominent. This is true in case of an engagement in which the response seems to be connected with the day of the week rather than with the person, situation, or event to which we are preparing to adjust ourselves.

This summary statement can obviously be looked upon as the barest sort of outline of the initiation of a continuous or memory reaction. In fact, a fuller content description would necessarily include details concerning the nature of the specific future act involved, besides the description of the exact objects, persons and events serving as the adjustment and substitute stimuli.

The point to the triple association is plain and follows from the general nature of memory action. Because the action is projected and later to be completed when the adjustment stimulus will no longer be present, it is essential that there be connections made between what is to be the consummatory action and other stimuli capable of arousing the action to the adjustment stimulus. But in order that one object or condition should be capable of substituting for another object or condition, it is necessary that the two objects be connected with each other as well as with the projected act. The

entire process of connection spoken of here is merely the ordinary process of psychological association.

(2) *The Consummatory or Recollective Phase.*—The operation of the delayed phase of the memory reaction consists essentially in its arousal by the appearance of the object serving as a substitute stimulus or by the reacting person otherwise coming into contact with a substitute stimulus. In consequence, this contact with the substitute stimulus may be a definitely arranged affair as in the case of employing a memorandum book for the purpose, or it may consist of a very casual contact.

This whole matter of the consummation of a memory act is well illustrated by the fact that forgetting is a direct function of the deliberateness or casualness of the contact of the person with the substitute stimulus. This point may also be illustrated by observing that the possibility of remembering is a function of the number of substitute stimuli connected with the adjustment stimulus. The more substitute stimuli that function in any specific situation the more probable it is that there will be no forgetting, the more probable, in other words, that the memory response will operate.

The reason why a memory response is more likely to occur when there are more substitute stimuli than when there are less is because of the obvious greater possibility for contact between the person and the stimulus. That is to say, the adjustment stimulus is more thoroughly represented. This fact of making possible the operation of the consummatory phase of a memory reaction, or let us say, in short, remembering at all, is usually referred to as retentiveness.¹ The fact that certain information is retained depends upon the number of objects and other facts with which it is connected. For this reason it is generally recognized that the more systematically organized one's knowledge is, that is to say, the more connections made between substitute stimuli and the knowing response, the more capable one is in this kind of situation and the greater facility one has in the employment of such information.

We might emphasize here that this factor of retentiveness is decidedly a matter of associational connection and thus is justified the traditional belief that memorial behavior is to the largest extent a fact of association. More important it is, however, to observe that the associational process is at every point a thoroughly and completely objective series of happenings. Memorial behavior, we re-

¹ The writer here wishes to pay a just tribute to the whole line of psychologists who have observed the serial (three or four members) functioning of a memory behavior segment, although they do not emphasize the functional continuity of the members, nor describe them in an objective manner.

peat, is without doubt a matter of associational connection, even if it is true that in some cases as in cramming or the remembering of a thing but for a brief period, only a very limited number of retention substitute stimuli exist and operate.

In the operation of memory behavior segments a series of specific forms of operation may be observed to occur. These forms may involve primarily either the stimulus or the response and may be described as follows.

(a) *Stimulus Forms*

(1) *Some Object or Event Operates throughout the Whole Behavior Segment.*—Here the substitution and adjustment stimuli are both the same object, that is, I remember to react to some object because I now see it or remember to tell some person something I agreed to tell him because his presence itself reminds me of the fact. Probably this form of memory action would be most common in the segments which we have agreed to name the recollective reactions.

(2) *Another Object Becomes the Adequate Stimulus.*—In these segments a different object from the one to which the response is to be made initiates the consummatory phase of the response. This form of memory may safely be called the typical sort and it undoubtedly constitutes a larger series of actual memory behavior segments. Moreover, the reactions of this type constitute the most effective of our memory behavior. Because of the range of objects that can serve to arouse the reaction the memory behavior can be carried over great stretches of time and place. A striking example of the power of such memory actions as we are now discussing is supplied us in the operation of the extremely complex behavior in which we use printed and other symbolic records to incite memory reactions to function.

(b) *Reaction Forms*

(1) *Same Reaction System.*—Many of our memory reactions operate through a postdated functioning of the same reaction system or response pattern. This reaction system or pattern is the original projected action which is connected with a specific stimulus, whether it be the same or a different object. Illustrative of this form of memory reaction is the recalling of a name, a date or any type of information. The effectiveness of the reaction depends entirely upon the literalness with which the original projected act operates after its period of actual delay. Possibly this type of

reaction does not comprise the most important of our memory reactions, since we include here the whole series of rote memory responses.

(2) *Different or Partially Different Reaction Systems.*—A great number of our memory reactions do not involve necessarily a simple exact repetition of a specific reaction system. Rather a more or less greater freedom is allowed us in the action. This fact arises from the circumstance that these types of memory behavior represent adaptation to cultural conditions or objects and not to specific physical objects. Nor are these reactions very definite direct adaptations, such as going to a certain place at a given time; instead they involve situations in which a novel or constructive action carries out the purpose of the situation. The projection and later carrying out of a scientific investigation, the execution of a literary or other artistic commission, in so far as they involve a projection and a later operation of a memory reaction, all illustrate the extreme forms of memory reactions of the present class. From these more complex substitutable responses we may trace out a descending series which may run down to substituted reactions differing very little in morphological character from the action operating at the time the memory behavior is in the projection stage.

VI. RECOGNITION AND MEMORY

Psychologists have always recognized that memorial behavior essentially and intimately involves recognition. The relationship is indeed a close one although recognition is not exclusively a feature of memory. Perceptual reactions are no less closely connected with recognition behavior. That recognition reactions, however, have historically been presumed as most closely connected with memory is accounted for, we believe, by the fact that in complex memorial behavior recognition assuredly occupies a very strategic and prominent position. Unless we are to leave our description of memory in too fragmentary a form we must then indicate the exact operation of the recognition function in memory.

But first let us point out why recognition appears to be so prominent a factor in such behavior. Both the clue and solution are found in the continuous and prolonged character of memory reactions. In other words, there must be some marks or signs of connection of the second phase with the first. The point is, that the second phase, although an integral part of the memorial behavior segment, may still be detached in whole or part from the first phase of action. Now aside from the essential or universal fact that the two phases must occur in order that a memory act shall be completed, it is

frequently necessary that the person performing the action should appreciate overtly the connection between the two phases. How frequently it is necessary for this overt appreciation of the continuity of the memory behavior to occur depends upon the general overtness of the memory action. That is to say, whenever the person is fully aware of the need for an operation of the memorial reaction, then the recognition factor is essential. Incidentally there issues forth here two related points that must be at least briefly inspected. In the first place, not all memorial behavior requires a recognition factor; only the more elaborate sorts of memory do so. And in the second place, the recognition feature may be of different degrees. It remains now for us to describe briefly the process of recognition and to indicate how it varies in its operation.

Recognition in general is a meaning reaction; that is to say, the final action to a stimulus is preceded by a determining action which lends color and direction to the succedent or final act. Because a memory action involves a minimum of two operations (projection or consummatory) and also two stimuli (adjustmental and substitute) the stage is well set for the performance of recognition action. To illustrate with the simplest case, when the substitute stimulus appears there may occur a single direct response to the adjustment stimulus; here we have memory without recognition. But if in this behavior segment some implicit or overt response precedes, either necessarily or fortuitously the reaction to the adjustment stimulus, why then we assume that the individual recognizes either the reaction or to what the reaction is made. In other words, the substitution stimulus-object becomes a sign for whatever thing we presume to be signified (act or adjustment object). As in every other case of meaning behavior the recognition factors or reaction systems are to a considerable extent, though of course not exclusively, implicit responses and verbal reactions, and possibly the latter are most characteristic in memory behavior. Very familiar is the functioning of exclamatory reactions in memorial recognition, "I see" being a most frequent meaning reaction, although none the less potent are subvocal language responses.

Besides the appreciation by the person that the stimulus-object initiating the memory behavior, and the stimulus-object (substitution) operating in the culmination of the act are related to each other and to the act, there are still other factors involved in the more complex forms of recognition. In addition to those enumerated features, the individual may also realize his own place in the total memory situation. To be explicit, the person himself becomes an additional stimulus, or more frequently assumes the function

of the setting of one or more of the stimuli involved. The most complex form of recognition is the case in which the individual continues to project himself into every feature of the continuous memory response. It is in such cases as these that the person's own responses constitute a good share of the memory behavior and condition directly the continuity features of such behavior.

Now we might point out that in the complex recognition memory reactions the person may not only play a part in the total behavior when the recollective phase operates, but may also play such a part in the initiatory phase. Instead of the person appreciating that the response has in fact been continued, has reached culmination and that the final response has answered the purpose, he may likewise appreciate the necessity for and the actual occurrence of a projection act. Recognition of the nature and needs of projecting a response to be later consummated depends, of course, upon previous experiences with similar situations.

VII. THE STIMULI FOR MEMORY REACTIONS

In descriptions of memory behavior the specifications of stimuli and stimulation conditions appear to be of more significance than in other types of action, although stimuli are of necessity integral factors in all psychological acts. In the first place, because memorial retention consists of the interconnection of responses with adjustment and substitute stimuli, the stimuli are more uniquely phases of the total behavior situation. In the second place, since memorial behavior comprises two phases operating at different times, the stimuli features of such reactions loom large. And finally, memorial reactions are responses of occasion; so that combinations of responses function together and for that reason the stimuli obtrude themselves upon the student who attempts to analyze such behavior. To illustrate, when taking an examination the fact that we are undergoing examination is in general a stimulus for memorial behavior, while the specific ideas or facts recalled are brought out by the particular questions which we may call the substitute stimuli for the objects and events around which the examination is centered.

In general, then, we find the stimuli factors exceedingly conspicuous in descriptions of memorial behavior. We may proceed now to point out some of the more prominent forms of memorial stimuli and we might, because of the prominence of the recollective phase in memorial behavior, put the problem into the following form. What kind of objects and conditions can serve as substitute stimuli?

Among such stimuli we find of course objects and events. Any object or event connected with some other object or event to which we respond without its being present may now serve to arouse a response to that non-present object.² The same thing is true of the setting of an object or event. A time, place or object setting may serve as a substitute stimulus to induce a reaction to some adjustment stimulus-object which was at some previous time connected with that setting. Very instructive is the observation here that a thing may serve as a substitute stimulus for itself, as in the case of some object stimulating a recollection of some past experience with it.

Again persons constitute a large part of our memorial stimuli. This is true for several reasons; first, a large part of our behavior in general involves contacts with persons and in consequence the latter may substitute for each other as memorial stimuli. Moreover, because much of our memorial activity consists of informational reactions the stimuli thereto consist of language activities of persons. Besides the language reactions of other persons, one's own language responses are a potent source of memory behavior. Nor do the language acts exhaust the list of substitute stimuli, since our observation reveals numerous other of our reactions that serve in similar capacities.

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BOOK REVIEWS

Dodi Ve-Nechdi (Uncle and Nephew) the work of Berachya Hanakdan. Edited from MSS. at Munich and Oxford, with an English translation, introduction, etc.; also English translation from the Latin of Adelard of Bath's *Quæstiones Naturales*. HERMANN GOLLANCZ. Oxford University Press, 1920. Pp. xxii + 220.

Berachya Hanakdan—a Jewish scholar of the thirteenth century—was lost track of by the historians even though he seems to have played a prominent rôle in medieval literature. The Fox Fables were his only printed work before 1902, when Professor Gollancz edited and translated some of his manuscripts and entitled them *Ethical Treatises*. These treatises, though regarded by Gol-

² At this point we find in the actual operation of psychological facts a justification of Dewey's contention that knowledge involves a continuity of objects and events. Cf. Dewey's "Realism without Monism or Dualism," this JOURNAL, XIX, pp. 309, 351.

lanez and others as a compendium of Saadya, Bachya, and Gabirol, are marked, however, with more original thinking than appears on the surface. Berachya must have been guided in the choice of excerpts by some ulterior motive. One may venture to assume that he desired to clear philosophy from too abstract thinking and give it a more practical bent. Hence his emphasis on ethical problems on the one hand, and his elimination of metaphysical subtleties on the other. His treatises are pregnant with pragmatic philosophy.

Berachya's *Dodi Ve-Nechdi* is an adaptation of the *Quæstiones Naturales* of Adelard of Bath. It treats the same questions and under the same form of a dialogue between an uncle and nephew. These questions deal with various branches of natural science and philosophy. They embrace plants, animals, man and the physical conditions of the universe. Like all medieval thinking, they are a juxtaposition of pertinent questions still honored today, with futile and insignificant ones.¹ To the modern mind the futile ones are perhaps the more fascinating as they are indications of the progress philosophy has made in gradually disentangling pertinent from sterile queries.

The *Quæstiones Naturales* as well as the *Dodi Ve-Nechdi* seem to me to have been undertaken in a spirit of reform, in the hope of giving a new impetus to the thought of the time. The Arabian sciences were still new in the west of Europe and decried by many. Adelard hoped that in introducing them, he would open new vistas for his generation which he describes as lax in morals and enslaved in thought. Berachya also seems to have been animated by a desire to broaden the Jewish horizon with the sciences of the time. Hence he used the *Quæstiones Naturales* as his reference work. Much divergence could not be expected in a period when science was but a crystallized and closed scheme statically transferred from one language into another. Whatever related to natural sciences Berachya copied freely from Adelard; but when touching upon moral or spiritual philosophy he followed, I think, his own line of thought. Such an assumption would account for the striking similarities, as well as for the divergencies noticeable in the two works.

¹ Such as: "Why of all the organs of a man's body is it the eye that sees?"

"Why human beings do not have horns?"

"Why is the nose above the mouth?"

"Why does the hair fall off from the side of the face?"

"Why are not the eyes in the back of the head?"

"Why is the nostril the organ of smell, the palate the organ of taste, and the hand the organ of touch?"

"Granted that the stars are alive on what food do they live?"

The scholarly arrangement of Professor Gollancz's work makes it easy to prosecute a comparative study between the two authors. He incorporates in this volume a translation of Adelard's *Quæstiones Naturales*. This is the first English translation from the only existing Latin edition of 1480. At the head of each chapter in the translation of the Hebrew manuscript, he indicates the corresponding chapter in Adelard's original. He also appends at the end of his introduction a table indicating the relation between the respective chapters in the corresponding works. The scholarly introduction as well as the pleasant and facile style of the translation, faithfully rendered, greatly enhance the value of this volume which is an interesting contribution to medieval literature.

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NEW YORK CITY.

Readings in Philosophy. Compiled by Albert Edwin Avey. Columbus, Ohio: R. G. Adams & Co. 1921. xii + 683 pp.

The Emotions. JAMES and LANGE. Edited by Knight Dunlap. Baltimore: Williams & Wilkins Co. 1922. 135 pp.

Avey's anthology is intended as a supplement to an introductory course in philosophy, "a fairly representative collection of the classic passages of philosophical literature" (v). The choice includes portions from Plato, Crawley, Frazer, Spencer, Diogenes Laertius, St. Matthew, Aristotle, Sextus Empiricus, Corinthians, Hume, St. Thomas, Spinoza, Exodus, Comte and a number of other writers. They are arranged under a variety of heads including Philosophy of History, Epistemology, The Status of Values, Metaphysics, Medieval Philosophy, Kant, Pluralism, Mysticism, The Personality, Mission and Influence of Socrates, *et al.* The passages are necessarily short, cut off from their context, and often without very clear relationship to the chapter headings. For example, in "The Differentiation of Philosophy and Science from Religion" we have twelve of Francis Bacon's *Native Fallacies* plus forty-six *Fragments* from Diel's *Vorsokratiker*. Yet the collection serves a purpose—however much it may suggest Pope's line concerning the Pierian Spring—in tempting an occasional student to deeper draughts.

The chief advantage in the reprint of the James-Lange essays on the emotions—the first of a series of "Psychological Classics" edited by Knight Dunlap—lies in the easier accessibility of Lange's monograph. The translation is made by I. A. Haupt from Kurella's *Über Bemüthsbewegungen* which appeared in 1887, two years after

the Danish original. French translations are also in existence, but hitherto psychologists without knowledge of these languages have not had direct access to Lange's contribution.

The other two essays are: first, a reprint from *Mind*, 1884, "What is an Emotion?", James' first discussion, and secondly, Chapter XXV of the *Psychology*. These, of course, overlap to a considerable extent but there is some convenience in having them together. Brief biographical notes of James and Lange are contributed in the Editor's Preface.

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Hugo Münsterberg, His Life and His Work. MARGARET MÜNSTERBERG. New York and London: D. Appleton & Co. 1922. x + 448 pp.

Almost one exclaims, "Nessun maggior dolore" on glancing through this book. I remember with what satisfaction James announced to his class in psychology that Münsterberg was coming to Harvard to take charge of the psychological laboratory. And I remember, as one of it, the eager interest of Münsterberg's first group of students, in beginning experimental psychology under the guidance of the famous new professor. And I remember the great affection and high esteem felt for Münsterberg by Royce in those first years; and when Münsterberg seemed likely to be seriously ill, the great concern of us all; we were so sure then of what Münsterberg's coming meant to Harvard.

The book idealizes a most unhappy history, but it is an act of loyalty and affection by a daughter. Those who esteemed Professor Münsterberg to the end will thank the writer for her work. Others, and there are so many of them, will declare it all out of perspective, giving no idea whatever of Münsterberg's real relation both to Harvard and to America in the latter part of his life. There is, of course, much information about Münsterberg's life and writings.

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JOURNALS AND NEW BOOKS

THE PHILOSOPHICAL REVIEW. Vol. XXXI, No. 5. On the Meaning of Value: *H. D. Oakeley*. The True, The Good and The Beautiful: *H. R. Marshall*. A Comparison of the Scientific Method and Achievement of Aristotle and Bacon: *W. M. Dickie*. Discussion: $7 + 5 = 12$: *G. W. Cunningham*.

LA CIENCIA TOMISTA. Año XIV, No. LXXVII. La Canonización de los Santos y la fe divina: *Marín-Sola*. Fray Diego de Deza, campeón de la doctrina de Santo Tomás: *García*. El mérito teológico y sus divisiones: *Lumbreras*.

ZEITSCHRIFT FÜR PSYCHOLOGIE. Bd. 90, Heft 1 u. 2. Zur Theorie der stroboskopischen Bewegungen: *F. Hildebrand*. Zur Psychophysik der Geradheit: *E. Rubin*. Soziale Verhältnisse bei Vögeln: *T. Schjelderup-Ebbe*.

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MIND. Vol. XXXI, No. 124. Professor Alexander's Theory of Sense Perception: *G. F. Stout*. Is the Conception of the Unconscious of Value in Psychology?: *G. C. Field*, *F. Aveling*, and *J. Laird*. Are History and Science different Kinds of Knowledge?: *R. G. Collingwood*, *A. E. Taylor* and *F. C. S. Schiller*. Symbolism as a Metaphysical Principle: *W. Temple*. Discussion: Physics and Perception: *B. Russell*. Rejoinder: *C. A. Strong*. Some Remarks on Relativity: *R. Ainscough*.

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NOTES AND NEWS

The Rev. James Hastings, D.D., originator and editor of the *Dictionary of the Bible, the Encyclopaedia of Religion and Ethics*, and other important works, died October 15, 1922, at Kings Gate, Aberdeen. The following is quoted from the London Times: "What may justly be called Dr. Hastings's *magnum opus*, the "Encyclopedia of Religion and Ethics" in twelve volumes, began to appear in 1908 and was completed last year. This vast undertaking involved the constant guidance of an extraordinarily varied company of scholars and specialists of all countries and religions. Articles came in all civilized languages, and the supervision of the translators alone was a gigantic task. Although the work appeals chiefly to scholars and experts, it has nevertheless had a large sale among the general public, whose interest in religion and morals is deeper than is often supposed. Dr. Hastings had already planned an extra volume of indices to the whole work, and he had also made researches in the language of the English versions of the Bible with a view to a systematized dictionary."

Vol. II, No. 5 (March 2, 1905) of this JOURNAL is out of print. The editors will pay fifty cents for a copy of this number. .

THE JOURNAL OF PHILOSOPHY

DR. SCHILLER'S ANALYSIS OF *THE ANALYSIS OF MIND*

DR. SCHILLER'S article dealing with me in this JOURNAL (Vol. XIX, No. 11) is a model of philosophical discussion: the points which he discusses are fundamental, and the divergences between him and me which he notes concern vital problems. He and I are agreed, I think, that it is impossible to produce logical arguments on either side of the questions which divide us. Philosophies which differ radically necessarily involve different logics, and therefore can not be proved or refuted by logic without question-begging. Accordingly, the remarks which I shall have to make will be of the nature of rhetoric rather than logic.

Dr. Schiller begins by deploring my atavistic tendency to return to Hume. To this I plead guilty at once. I regard the whole romantic movement, beginning with Rousseau and Kant, and culminating in pragmatism and futurism, as a regrettable aberration. I should take "back to the 18th century" as a battle-cry, if I could entertain any hope that others would rally to it. What I object to about the intervening period is summed up in Lord Tennyson's "noble" words:

But like a man in wrath, the heart
 Stood up and answered: I have felt.

I dislike the heart as an inspirer of beliefs; I much prefer the spleen. I take comfort in Freud's work, because it shows what we are to think of the heart, which, he says, makes us desire the death of our parents, and therefore dream that they are dead, with a hypocritical sorrow in our very dreams. The heart is the cause of the anti-rational philosophy that begins with Kant and leads up to the "will to believe." The heart is the inspirer of atrocities against negroes, the late war, and the starvation of Russia. (See McDougall's *Social Psychology*, which attributes actions of this kind to "the tender emotion.") People who believe in the heart agree with Dr. Schiller's dislike of "abstract analysis in search of the 'simple' and elemental, conducted from the standpoint of an extraneous observer." Why I like them I do not know, though probably any

"extraneous observer" could tell me. But I can suggest reasons which might lead other people to believe in them.

I begin with the question of the "extraneous observer." For reasons, some of which I have set forth in *The Analysis of Mind*, I hold self-knowledge to be very precarious and deceptive. What little I know about myself I owe to the observations of candid friends. The greater reliability of external observation is shown by the usual scientific tests—power of prediction, *etc.* The whole method of psycho-analysis is a vindication of the trained outside observer. Dr. Schiller, of course, is not advocating old-fashioned introspection, which makes one's ego an object and tries to duplicate it into observer and observed. He is advocating what he calls "activist psychology," according to which activity is the fundamental thing. Now it may be that I am an unusually lazy person, but the fact is that I know nothing of "activity." I observe that my body moves in various ways, but so do other bodies, living and dead. I observe that when my body moves there are certain sensations, and sometimes before it moves there are other sensations which may be called "tension" or "strain." Sometimes also the movement is preceded by images of it, particularly in the case of a difficult movement, such as a high dive. That is to say, I can discover various correlations of perceptions of bodily movements with other perceptions of bodily states, or with images, before, after, or at the same time as, the perceptions of the bodily movements. But I am utterly at a loss to recognize this "activity" which is supposed to be the very essence of life. I am forced to conclude that I am not really alive.

As for "abstract analysis in search of the 'simple' and 'elemental,'" that is a more important matter. To begin with, "simple" must not be taken in an absolute sense; "simpler" would be a better word. Of course, I should be glad to reach the absolutely simple, but I do not believe that that is within human capacity. What I do maintain is that, whenever anything is complex, our knowledge is advanced by discovering constituents of it, even if these constituents themselves are still complex. It is customary in philosophy to speak ill of "abstraction," and to use as laudatory epithets such phrases as "concrete fulness," "the richness of the living flux" *etc.*, generally supported by the opinion of Mephistopheles on the relation of theory to life. For my part, I am regretfully compelled to differ with Mephistopheles on this point. And even if I did not, theory is the business of philosophy, and if theory is bad, it is better to give up being a philosopher. Modern philosophers have not the courage of their profession, and try to make their systems ape real life

till they become indistinguishable from jazzing. Meanwhile science pursues a quite different course. The more it advances, the more abstract and analytical it becomes; and the more abstract and analytical it becomes, the more it is able to increase our knowledge of the world. Philosophy, to save its face, has invented a theory that scientific knowledge is not real knowledge, but that there is an extra superfine brand of knowledge to be obtained in philosophy, not by observation of the world, but by giving way to our wishes—particularly the wish to think that we can know without taking trouble. This is to my mind a complete delusion. I do not believe that there is any way of obtaining knowledge except the scientific way. Some of the problems with which philosophy has concerned itself can be solved by scientific methods; others can not. Those which can not are insoluble.

I do not doubt that the difference between those who like analysis and those who dislike it is temperamental. I can not prove that analysis is the right method except by using analysis, which would beg the question—I will not even deny that the mystics (as one may call the opponents of analysis) *might* have had the best of it in practice. But in arguing with a pragmatist it is permissible to point to the extraordinary fruitfulness of science, which uses analysis, as against the sterility of philosophy, which rejects it. Nay more, as against such an opponent it is permissible to point out that analysis enables us to produce the necessities of life and defeat competitors—which ought, on pragmatist grounds, to be the ultimate test of truth. I therefore make no apology for using analytic methods. If they have dropped out of philosophy since Kant introduced the “practical reason,” so much the worse for philosophy. I respect Descartes, Leibniz, Locke, Berkeley, and Hume, all of whom employed the analytic method. I do not believe that Kant or Hegel or Nietzsche or the more modern anti-rationalists have contributed anything that deserves to be remembered.

I pass by the question of the relation of Kant to Hume, as of merely historical interest, remarking only that, whatever may have been Kant's *intellectual* debt to Hume, the difference between their temperaments and desires was very great. The next point of importance in Dr. Schiller's paper concerns the relations between psychic elements. He says of me: “This psychological analysis assumes that it can start with an indefinite plurality of entities or facts, out of which psychic structures can be built. . . . Russell, for example, may sometimes be found to declare that his ‘main thesis’ is that ‘all psychic phenomena are built up out of sensations and images *alone*.’ Actually these structures do require (and employ)

a minimum of mortar, both in Hume and in Russell. This is introduced under the names of 'association,' 'causality,' 'memory,' 'expectation,' and sundry 'relations,' such as 'meaning.' But their presence and activity are so little emphasized that they are even verbally denied, as in the passage just quoted."

This passage shows a misunderstanding which is truly astonishing. If I said "the walls of my house are built of bricks and mortar alone," should I be supposed to be asserting or implying that my walls were indistinguishable from a heap of separate bricks and a puddle of mortar? It is obvious that the bricks in the wall have a structure, that the structure consists of relations between the bricks, that these relations are given empirically in whatever sense the bricks are given, and that the relations are something other than the materials of which the walls are built. Similarly in the passage which Dr. Schiller quotes, I did not suggest or imply that sensations and images would constitute all psychic phenomena without suitable relations, any more than that bricks and mortar would constitute a house while they remained in haphazard heaps. And so far from not emphasizing the relations required, the discussion of them forms a large part of the book. In fact, it will be seen from the last two pages of the book that these relations are what I regard as giving mind its character, for I say that mind consists chiefly in number and complexity of habits, and habits are obviously constituted by relations. I do, however, most strenuously deny that the relations which I observe, whether in the mental or the physical world, are *a priori* principles of synthesis in the Kantian sense. When I look at a wall, I perceive parts with spatial relations; so I do when I contemplate a complex visual image. Relations and terms are given together, and are alike empirical. Not of course all relations, or all terms—some are inferred, but the inference would be impossible unless some were empirical data.

Dr. Schiller continues: "The plurality, which common-sense, Hume, and Russell, all treat as a *datum*, is not present in the original experience, and is at best a construction resulting from a course of philosophic reflection." This statement seems to me to be an instance of a very common fallacy in psychology, namely the assumption that nothing is happening in a man's mind except what he is aware of. This assumption is often supported by an appeal to James's remarks on the "psychologist's fallacy," but in fact such support is illusory. James argues, very correctly, that a given situation will not have precisely the same effect upon a layman as upon a psychologist, because the psychologist has trained himself to a certain kind of reaction. I am willing to believe that, before

James's time, there were psychologists who committed this fallacy, but since his time it is the opposite fallacy that has become common. It is now constantly assumed that if a savage, a baby, or a monkey has an experience which he or it does not discriminate into related parts, then the experience in question does not consist of related parts. It would be exactly as valid to argue that because Newton's apple did not know it was falling, therefore it was not falling, and the theory of gravitation may be dismissed as an example of the "psychologist's fallacy."

The notion that a savage or an animal is the best judge as to the general nature of his own mental processes is not held in any other context. Even in civilized and highly educated people, psycho-analysts detect all kinds of processes of which they are unconscious. Nevertheless, when a savage shows that he is muddle-headed as to the muddle in his head, it is assumed that we ought to learn to be equally muddle-headed, and that no clear account of his muddle is possible. This favoritism seems to indicate a bias in favor of muddle. For my part, I regard muddle as a phenomenon like another. I see no more reason to be muddled in investigating a muddle than to be muddled in investigating anything else. One might as well maintain that a theory of wind ought to blow one away, or that a theory of undulation ought to make one seasick. Savages are muddled as to what is going on, whether inside them or outside them, and their account is not to be accepted. Therefore, when Dr. Schiller says "the plurality . . . is not present in the original experience," he is misled by the ambiguity of the word "experience." I should say: "The plurality is present in the original occurrence, but is not experienced." I should add that, however sophisticated we become, most of what happens to us is not experienced by us; in regard to most of the occurrences of our lives, we are as unconscious as Newton's apple.

The next point to be considered concerns Dr. Schiller's statement that my "method is *not* concerned with the actual course of mental development, but with an ideal description of its products. It takes an *adult* mind and rearranges its contents in a systematic and esthetically pleasing order." This statement seems to me partly true and partly false. I deny that I am not concerned with the actual course of mental development, and also that I take an adult mind in the sense intended. I admit that I rearrange the contents in a systematic and esthetically [or logically] pleasing order, but then that is the very business of science. As for taking an adult mind, I begin with Thorndike's animals in cages, which may have been adult animals, but were not "adult minds" in the sense re-

quired for Dr. Schiller's point. I have tried throughout to take account of whatever can be learnt about infant and animal psychology. It is partly for this reason that I have been concerned to praise behaviorism, which has adopted the only method by which infant and animal psychology can be made scientific. But when I had (as I thought) exhausted what could be learnt by behaviorist methods, and felt obliged to call in the aid of introspection, I was compelled to have recourse to the adult mind, because unfortunately I am adult. Dr. Schiller appears to possess some mysterious method, other than behaviorism, by which he can ascertain what goes on in the minds of infants and animals, and he implies that it is more like what goes on in his mind than like what goes on in mine. As for that, I must take his word for it. But even then I am not obliged to admit that they have true beliefs as to what goes on in their own minds.

What Dr. Schiller is really objecting to is, I suppose, that my method is not historical or evolutionary. I have, it is true, discussed the process of learning somewhat fully, but I am equally interested in processes which are not progressive. I think the interest in development which came in with evolution is a barrier to the elementary understanding of the simpler facts upon which any solid science must be built. Laplace's *Mécanique Céleste* presupposed Galileo, Kepler, and Newton, who treated the solar system as a stable adult. Similarly there will be no beginning of a genuine science of psychology so long as people are obsessed by such complex facts as growth and progress. I know it is customary to treat life as essentially progressive. But this seems to be a sheer mistake. If a census could be taken of all the organisms now living, I have no doubt that an immense majority would be found to be unicellular, and to have made no appreciable progress since the origin of life. And to the remainder, decay is quite as natural as growth. Yet Dr. Schiller does not reproach me with having paid too little attention to senility.

Some of Dr. Schiller's criticisms are quite beyond my comprehension. He says, as an objection to me, "a biologically possible analysis can not start from anything less than the whole process involved in an act, *viz.*, a response to stimulation which is salutary, or harmful, and is selected accordingly." Who would suppose, reading this, that this is the very thing I do start from? It is the same thing that I have called a "behavior-cycle," and I have put it at the beginning, as being characteristic of living organisms. I observe, however, (a) that a process of this kind is complex, and therefore susceptible of logical analysis; (b) that when we come

to the more elaborate processes which we are aware of carrying out, we find need of elements which it does not seem necessary to assume in order to account for the responses of an amoeba; (c) that "response to stimulation," as we ourselves experience it, often involves something that may be called, in some sense, awareness of the stimulus, and thus lands us with the problem of perception and even of memory.

I have only one more subject to discuss, namely the subject. It is surprising to find Dr. Schiller sticking up for the old-fashioned soul, and quoting with disapproval the remarks about the ghost of the subject, which once was the full-blooded soul, which I adapted from William James.¹ He does not apparently notice that the remark to which he objects is a paraphrase of James's, but his attitude shows that he is less in agreement with James than is commonly supposed. The background of their thoughts is very different. James's mind was a battle-ground of medical materialism and the mysticism suggested by Swedenborg. His learned self was scientific and his emotional self cosmic; neither led him to attach great value to the ego. On the other hand, Dr. Schiller's learned self is primarily hellenic. He is fond of claiming affinity with Protagoras, who would hardly have suited James. Idealism is to him what James called a "live option"; at one time he collaborated in a work called *Personal Idealism*. It seems to follow that the parts of James's work with which I sympathize most are those with which he sympathizes least. This case of the soul is one of them. On this question I can safely leave the argument to James's American successors, from whom I have learnt many of the doctrines advocated in *The Analysis of Mind*.

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CRITICAL REALISM AND THE EXTERNAL WORLD¹

ESSAYS in Critical Realism is offered as a new solution of an old epistemological problem. Its authors, a group of philosophers who differ on many important metaphysical points, have here united upon certain matters connected with a theory of knowledge. This theory of knowledge, it is hoped, will enable us all to satisfy our natural cravings to be realists. "An honest man . . . is a realist at heart."² It is maintained that, if non-realistic phi-

¹ See the quotation from him in *Analysis of Mind*, p. 22.

² Read at the meeting of the Western Division of the American Philosophical Association, at Lincoln, April 14, 1922.

² P. 184 (Mr. Santayana). Unless otherwise stated the references are to *Essays in Critical Realism*. The name of the author quoted will in each case be noted.

losophies have dominated the thinking of many persons during the last century, the trouble has been that realism has not known how properly to present its claim. The central issue of the new co-operative volume is our ability to know the external world. Hence by its success in meeting this issue, critical realism must primarily be judged. That the volume has many good features and some attractive sections, no fair critic could deny. The entire volume emphasizes ably the ideal reference in all thinking, the operation of the mind in terms of logical essences which can not be explained as sensational or imaginal. Without such essences or meanings reflection could not go on. Historically, most realisms have wholly neglected these essences, and have thus in this respect been greatly improved upon and perhaps superseded by critical realism. But it is with the argument for an external world that critical realism aims first of all to deal. The importance and the value of the volume depend fundamentally upon the soundness of this argument.

The term critical realism was chosen with a definite meaning in mind. The new philosophy is a realism because it believes we can know extra-mental realities; it is critical because it distinguishes these objects from the immediate content of the mind. A clear statement of the position of critical realism is given in the following passage: "Knowledge is just the insight into the nature of the object that is made possible by the contents which reflect it in consciousness."³ The external objects "assist in the rise in the organism of subjective data which are the raw material of knowledge,"⁴ but yet can themselves "be known only in terms of the data which they control within us."⁵ Unless external objects were really existent, the psychical content would not arise in the mind. Unless psychical content were present to mind, we would not know objects. Yet we know the external objects, not the psychical states, even though we know those objects through the instrumentality of the psychical states. The subjective content is the *terminus a quo*, not the *terminus ad quem*, of knowledge.

This position of the critical realists is subject to misunderstanding by a careless reader; for a rather common supposition has been that the object immediately present to consciousness must also be the object known. Not so, however, with the critical realists. "What we perceive, conceive, remember, think of, is the outer object itself,"⁶ an object independent of the processes of knowledge and of

³ P. 200 (Mr. Sellars).

⁴ P. 192 (Mr. Sellars).

⁵ P. 217 (Mr. Sellars).

⁶ P. 4 (Mr. Drake).

the effects which it may chance to produce in consciousness. Yet we never come into contact with that object directly. "We have no power of penetrating to the object itself and intuiting it immediately,"⁷ but have immediately present to us only subjective content. "The knower is confined to the datum, and can never literally inspect the existent which he affirms and claims to know."⁸ In other words the object of perception and the content of perception are two separate things, the former being objective and the latter subjective; and though the latter is caused by the former and the former is known by means of the latter, "their existence is quite distinct and their conditions entirely different."⁹ As the position is beautifully summed up in one passage: "The objects themselves, *i.e.*, those bits of *existence*, do not get within our consciousness. Their existence is their own affair, private, incommunicable. One existent (my organism, or mind) can not go out beyond itself literally, and include another existent; between us all, existentially speaking, is 'the unplumb'd, salt, estranging sea.'"¹⁰

Thus incompletely stated, critical realism recalls Locke's *Essay*. In spite of the disregard which some of the critical realists feel for their seventeenth-century ancestor, there are strong resemblances. Yet there are important differences too, which call for notice. Sometimes, to be sure, Locke gave up all hope of knowing the real, outer object; he regarded it almost as unknowable as Kant later regarded his *Ding an sich*, and confined human knowledge to relations between the ideas or bits of subjective content. This the critical realists never do. But at other times Locke, just as much as the critical realists, regarded the ideas, not as the objects to which knowledge was directed, but as the means by which knowledge was mediated of real, outer, external objects. He then speaks of knowledge of "real existence." And with great emphasis he says: "If our knowledge of our ideas terminate in them, and reach no farther, where there is something farther intended, our most serious thought will be of little more use than the reveries of a crazy brain; and the truths built thereon of no more weight than the discourses of a man who sees things clearly in a dream, and with great assurance utters them."¹¹ Yet even with this second and more realistic strain in Locke, the critical realists believe themselves not in agreement. In many passages surely, Locke, no more than the critical realists, took the immediate content of mind as the objects of knowl-

⁷ P. 225 (Mr. Strong).

⁸ P. 203 (Mr. Sellars).

⁹ P. 165 (Mr. Santayana).

¹⁰ P. 24 (Mr. Drake).

¹¹ Locke: *Essay Concerning the Human Understanding*, Bk IV, chap. 4, §. 2.

edge. But it is true that Locke did not distinguish, and that the critical realists do distinguish, between mental contents and data. And it is because of Locke's failure to take the data, the logical essences, into account, that he is deemed unsatisfactory and outworn. The critical realists contend that along with the subjective content there also are disclosed certain essences, which can not be taken as giving merely the *whatness* of the subjective content, but which do give the *whatness* of the external objects (except where the mind is in error). Hence it is maintained that through the essences we can bridge the estranging sea and can know the world as it really is constituted in itself. Even if we do not have objects existentially present within consciousness, we reach those objects by "a logical, essential, virtual grasp" of the mind.¹² We are thus enabled to affirm objects.

The central issue in the new theory of knowledge given by the critical realists boils down to the question whether the recognition of the data or essences enables us to know external objects, whether the critical realists are better off than Locke or any one who tried to infer external objects from the subjective content alone. If the historical types of realism upon a foundation of epistemological dualism can not bridge the gap between mind and object, what assistance can be derived from the affirmation of essences? The contention of the present paper is that the critical realists face exactly the same difficulty as that which they confess was present in older realisms. Even if the critical realists give a better analysis of what thinking is, they are no whit better off in getting from the thinking mind to the external world.

The premises of critical realism rule out the possibility of knowledge in the sense in which they desire it. Knowledge is "true opinion with reason"; and "an opinion is true if what it is talking about is constituted as the opinion asserts it to be constituted."¹³ Or, in other words, knowledge is a matter of "correspondence or conformity of the knowledge-content with the selected object."¹⁴ But if we grant the premises of critical realism, how can we ever be sure that our opinions are true? How can we hence have knowledge? If real objects are not present directly to the mind, if the mind has "no power of penetrating to the object itself," how can we be sure that the propositions in which we express our opinions conform to objects beyond? What test is there for truth? One

¹² P. 28 (Mr. Drake).

¹³ Pp. 98, 99 (Mr. Pratt). Quoted by Mr. Pratt from Mr. Santayana.

¹⁴ Sellars: *Evolutionary Naturalism*, p. 55. Though quoted from Mr. Sellars's last book rather than from the coöperative volume, it may fairly be assumed that he speaks for the rest of the critical realists on this point.

might suppose, were it not for Mr. Lovejoy's excessive fury with pragmatism, that the predicament of the critical realists would make them glad to accept workability as an alternative for the older meaning of truth; yet the critical realists all agree in rejecting the pragmatic point of view. By their own theory of the un-get-at-ability of objects, the critical realists have eliminated any chance of proving that the essences we have in mind are the correct *whatness* of the external objects. Truth being conformity of an essence to an object we can by hypothesis never reach, knowledge is impossible.

The fault with critical realism is not that it does not allow for the occurrence of error, but that it does not permit us to know when we have the truth and when we are in error. It may well be that the data or essences "are irresistibly taken to be the characters of the existents perceived, or otherwise known."¹⁵ If this were granted, it could still be asked how we know when they are correctly so taken and when incorrectly. It is not enough to confess that "there is always a bare possibility of illusion or hallucination";¹⁶ rather there is no possibility of distinguishing between hallucination and veridical perception at all. We are told that "experience indicates an actual, causally based agreement between the physical existent and the content of perception."¹⁷ But how can experience of the subjective sort postulated by the critical realists ever indicate whether we are justified in predicating essences of external objects? How can we say that agreement is indicated if one of the things between which agreement is asserted is inaccessible? We are told that in dealing with subjective content and external object "the tendency of the realist is to reply that the similarity is great; and may even rise to identity of essence."¹⁸ But what difference would truth and error have to us if we could not tell which was which, if we could not tell when there is identity and when not? It is maintained that the mind may "rest directly on the object" in cases of knowledge since the essence is universal and so can be both in the mind and in the object, and that only in cases of error is there dualism between the essence in the mind and the essence of the object.¹⁹ But how can we know when our minds are resting on objects, since the objects are not present to the mind except in so far as their essence is present? The essence is present to the mind in case of error just as

¹⁵ P. 5 (Mr. Drake).

¹⁶ P. 32 (Mr. Drake).

¹⁷ P. 202 (Mr. Sellars).

¹⁸ P. 165 (Mr. Santayana).

¹⁹ P. 202 (Mr. Sellars).

clearly as in the case of true opinion; and determination of truth and error, if not definition of their abstract meaning, is impossible to one shut up to the content of his own mind. Critical realism, though not denying the possibility of true opinion and also of error, does prevent us from distinguishing between them in every case except where for some special purpose we choose to make the subjective content or the essences themselves the object of our inquiries. Those essences would give us true opinion which contain or conform to the "structure, position, and changes" of objects;²⁰ but essences which give us wrong opinions about the structure, position, and changes of objects might often be accepted as irresistibly as those which give us true opinions thereof. To a critical realist a satisfactory essence would have to be one which was internally useful, not one which was objectively true.

One should not be confused, and some of the critical realists seem to be confused, by the discovery that in perception or any other consciousness we affirm an object. Affirmation does not constitute proof. We may affirm objects constantly without proving a single one to be as we affirm it, or even to be in existence at all. One of the critical realists draws a distinction between inferring an object and affirming an object, and maintains that we do not infer, but only affirm.²¹ That is the very trouble. There is no basis for inference,—or rather there is no check upon inference; there is only affirmation, made earnestly, upheld enthusiastically, followed persistently. But it is sheer affirmation. It is sheer dogmatism. It is an exhibition of the sort of enthusiasm which Locke so effectively opposed in his *Essay*, Book IV, chapter 19, a chapter from which we may learn much still. After saying that there are "two elements in perception, the affirmation of a co-real and the assigned set of characters or aspects," it is concluded that "the content is intuited, the object is reacted to and affirmed."²² The last phrase is ambiguous. It should mean just what the first phrase meant, namely that there is an affirmation of an object. It implies to a hasty reader that it has been found that there is an object really there which is reacted to and affirmed. Such a conclusion would doubtless be welcome, but can not be derived from the premises. Yet it seems that the distinction between these two meanings is not understood in the essay from which the quotation is made. Others of the critical realists do take account of this distinction, with the result that they are much readier to grant the danger of total skepticism. It is even acknowledged that the external

²⁰ P. 200 (Mr. Sellars).

²¹ P. 195 (Mr. Sellars).

²² P. 196 (Mr. Sellars).

objects may be the physical entities of the physicist, the other centers of consciousness of the panpsychist, or some such reality as might be defined by an ontological idealist.²³ But most of the critical realists have not the intellectual bravery to confess that there *may* be no external objects at all. Not simply can not we reach the external objects to check up on our opinions as to their nature, but we can not even get outside the mind to find if there are objects there. Perhaps nothing exists beyond the subjective contents and the essences. We may be affirming essences in an ontological vacuum.

The problem of knowledge raises the question of transcendence which is occasionally treated, but in different ways, by the different critical realists. Contradictions within critical realism here emerge according to the willingness of the various authors to grant the full implications of their premises. On the one hand it is said: "Knowledge of the existents affirmed requires no more transcendence than does this affirmation."²⁴ In one sense this proposition is true but altogether useless to a consistent critical realist; in another sense it would be a valuable aid but is false. The former sense would be that to know an existent (or external object) no further transcendence is required than is involved in checking up, or following through to its destination, the affirmation of the existent. The latter sense would be that to know an existent no further transcendence is required than to affirm it. Those two senses of the original proposition have been repeatedly confused in some essays of the volume. The former sense of the proposition, though true, would not do away with the necessity of getting beyond subjective contents and the affirmation of an essence to the external world, a necessity which runs counter to the premises of critical realism. The latter sense of the proposition, though it would enable us to prove whatever we wanted by affirming it, is false in identifying proof with convinced and obstinate affirmation. On the other hand it is said: "*Minds* have this characteristic of meaning more than they directly experience. . . . Hence the critical realist simply writes down transcendence as one of the facts of the world, just as the physicist writes down X-rays as a special sort of fact."²⁵ Here it is correctly realized that, if we are to have knowledge instead of opinions which are not checked up, we must have transcendence.

²³ P. 109 (Mr. Pratt). Since Mr. Pratt comes to this conclusion, one wonders why he speaks so pityingly of *der gute Berkeley* and "the weakness of Berkeley's subjectivism," p. 87. Why are not ideas in the mind of God as adequate an external world as anything else?

²⁴ P. 212 (Mr. Sellars).

²⁵ P. 99 (Mr. Pratt).

But on the premises of critical realism which exclude the possibility of penetrating to the real objects, should it not be frankly confessed that knowledge is impossible?²⁶ Critical realism can not lead to any other outcome if it retains its view that objects are inaccessible, unless it should decide that knowledge is what one determines to believe in the absence of all proof on the basis of some deep-seated prejudice or what one finds convenient to accept on the basis that it leads to happy issue. In perhaps the most illuminating passage in the collection of essays, Mr. Santayana shows that the validity of knowledge requires that we regard it as *transitive* and *relevant*.²⁷ But it does no good to insist on transitivity and then to deny the possibility of getting to the object with reference to which knowledge is relevant.

The validity of this critique of critical realism is even more apparent when the illustrations are examined in which the existence of external objects is supposed to be established. Space does not permit a detailed examination here of more than one typical case. It is said that we must believe in external objects because we can perceive another individual perceiving an object, we can see "the focusing of the eyes, the tension of the head, the directive set of the whole body, all leading usually to behaviour toward the object."²⁸ Do the premises of the critical realism permit us to say that we see these facts? On the basis of a philosophy which did not make the immediate content of perception "subjective," such an inference of another object would be justifiable.²⁹ But a critical realist could say only that what he calls the other individual and his adjustments are certain subjective content and certain essences in his mind. He should not assume the objective reality of the other individual's body in order through it to prove the objective reality of the object towards which the other individual is reacting. He can be sure only that he has certain subjective contents and thinks of certain essences, and nothing more. He has no check on the truth of the essences until he gets into contact with an external object; and he can not get into contact with an external object until he has some check on the truth of the essences. He must,

²⁶ In *Evolutionary Naturalism*, p. 49, Mr. Sellars defines knowledge as "a claim and content within experience concerning existences, outside of experience, mentally selected as objects." It is amazing that this definition can be seriously put forward in a book which operates on the basis of critical realism.

²⁷ P. 68 (Mr. Santayana).

²⁸ P. 196 (Mr. Sellars).

²⁹ I personally regard such an inference as justifiable on the basis of the theory explained in my article in this JOURNAL, March 30, 1922, Vol. XIX, No. 7, pp. 169 ff.

therefore, either confess to arguing in a circle or give up any claim to knowledge of a world without himself.³⁰

The critical realists do not all affirm the external world with the same assurance. The most confident of the group is undoubtedly Mr. Sellars. He objects to Lockian realism because it teaches that "we first know our ideas as objects and then postulate physical realities."³¹ He asserts against Locke that we know physical realities "from the first." The contention is plausible but hides a serious confusion. What is meant by knowing physical objects *from the first*? If it means that from the beginning of our experience we have subjective contents and essences which lead us to affirm external objects, there is nothing inconsistent with the premises of critical realism. But neither is there anything to prove physical objects to be really there: the affirmations may all be mistaken. If, however, the phrase means that we have greater assurance of the existence of physical objects than of subjective contents, we would have a sound basis for realism and no need for an elaborate proof of the external world. But this would be equivalent to maintaining direct contact of minds with external objects and hence to giving up critical realism. The plausibility of the passage about knowing physical objects *from the first* is derived from a confusion between the first and second meanings of the phrase. Locke could say that we know external objects from the first in exactly the same sense in which Mr. Sellars' premises would permit him to say it; namely, that from the beginning of experience we have such mental contents that we come to suppose a real and objective world. Even if the addition of essences to subjective contents is taken to improve upon Locke's account of the contents of consciousness, it in no way alters the nature of the jump from mind to object.

Others of the critical realists realize better than Mr. Sellars the difficulty here. It is said that the existence of an external world is a matter of an *as if*, and consolation is found in the fact that critical realism is no worse off than subjectivism which believes in other minds.³² Only two of the authors in the volume give evidence of following their premises to the logical conclusion. Mr. Pratt confesses that on the premises of critical realism "the ultimate nature of reality in itself may be very difficult, or even impossible, to discover,"³³ though he none the less proceeds to deprecate agnosticism in his closing pages. Mr. Santayana goes in thoroughness

³⁰ Cf. also pp. 22-24, 29, 169-170, *et passim*. Cf. further Sellars: *Evolutionary Naturalism*, pp. 30, 32, 40.

³¹ P. 193 (Mr. Sellars).

³² P. 6 (Mr. Drake).

³³ P. 104 (Mr. Pratt).

beyond Mr. Pratt. He grants that the subjective content "might have arisen without any occasion, as idealists believe is actually the case,"³⁴ and reduces the passage from the essence in thought to the existing object to a moral basis, "the leap of faith and action,"³⁵ a phrase strangely reminiscent of Kant's practical reason. The consistent logic of the premise that we intuit only subjective contents thus proves to be that realism is possible to those who want to assume it. But so is ontological idealism or any other metaphysics. So even is skepticism. Denial of all external reality would be no more of a hazard of faith than affirmation of an external reality. Perhaps we are "realists at heart."³⁶ But it would seem to be more honest to confess that we had no valid reason for believing what we want to profess. Realism of the "critical" type thus proves to be a matter of preference, of personal prejudice or choice, not of the logic of the premises.³⁷

Cæsar had his Brutus, Charles the First his Cromwell, and Locke his Hume. The critical realists should have gone on more often from their Locke to their Hume, in order better to appreciate the force of Hume's disintegrating criticism. Any one could apply to critical realism the epistemological reflection which Hume brought to bear on the Lockian tradition which assumed that the immediate content of the mind is "subjective." He wrote: "As to those impressions which arise from the senses, their ultimate cause is, in my opinion, perfectly inexplicable by human reason, and 'twill always be impossible to decide with certainty, whether they arise immediately from the object, or are produced by the creative power of the mind, or are deriv'd from the author of our being."³⁸ Taking into account the supposition of critical realism that the discovery of the essences relates us to extra-mental realities, any one instructed by Hume might say: As to those essences which come before the mind, their ultimate conformity to reality is per-

³⁴ Pp. 166-167 (Mr. Santayana).

³⁵ P. 183 (Mr. Santayana).

³⁶ P. 184 (Mr. Santayana).

³⁷ Mr. Santayana's essay amounts to showing that though the external world can not be proved it may be assumed with success. But it is not an external world apart from experience that he is usually talking about. He seems to be showing rather that we can take the world immediately present to sense as the real world. This is quite a different position than that of the other realists of this group. Even that, however, is not satisfactory. It seems rather to be true that the world is given as real and that all distinctions we discover, as that between mind and object, are made within this real world. Mr. Santayana regrettably has not escaped the subjective elements of the British tradition which mar his otherwise brilliant volume on *Reason in Common Sense*.

³⁸ *Treatise of Human Nature*, edition of Green and Grose, Vol. I, p. 385.

fectly unknowable by a mind which has no direct contact with reality; and it will always be impossible to decide with certainty whether they correspond to external objects or are convenient fictions for the practical, but not the theoretical, concerns of life.

A candid examination by the critical realists of the divergences in the views expressed in the coöperative volume might well correct the inadequacies of the theory. Those who are nearest to Locke are the most consistent in the development of their premises; and those who are most determined to be realists have the greatest trouble with the Lockian axiom of having only mental contents as immediate objects of the mind. In other words, if the group of writers here under review remain "critical" in their sense of the word as denying the direct contact of the mind with extra-mental objects, they have no logical basis for their realism; and if they wish to be realists with assurance, they have to cease to be consistently "critical." As it is, their realism should be called hypothetical or preferential or transcendental. But if they discard the assumption that the mind does not come into direct contact with external objects, realism would not have to be proved, and criticism might become more relevant to human concerns.

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"RELATIVITY, OLD AND NEW"

I SHOULD like to comment briefly on Professor Wadman's article so far as it is concerned with "objections" to my own remarks.¹ It seems to me that he has failed to appreciate my aim, and his criticisms are therefore almost wholly irrelevant. Had I been dealing with *the* aspects of relativity, they might be justified. But I confined myself to *some* aspects, while Professor Wadman treats of points which I deliberately omitted. My purpose was to insist that the theory has no direct bearing on the relativity of knowledge, or the subjectivity of time and space (p. 210). Everyone is familiar with the extreme views which have been advanced on these subjects; and from that standpoint it still remains true that "the philosophic problems of objective reality"—as such and in general—remain unaffected by recent developments; so far as they are concerned, the theory is a "benevolent neutral." That "objective reality is profoundly changed by the theory" (W., p. 206) is obviously true; and so far as our conceptual handling of

¹ This JOURNAL, Vol. XVIII, No. 8; XIX, No. 8. To avoid confusion in reference, I distinguish Professor Wadman's pages by W.

the external world is concerned, and subject (further) to certain qualifications which I still consider necessary in the interests of realism, Professor Wadman's presentation contains little more than what I have myself said (pp. 214, 215). But prior to all this there is the still more fundamental problem of the character of objective reality *in general*—not simply of its temporo-spatial basis or aspect; and it was with these preliminaries of the whole situation that I endeavored to deal, while Professor Wadman makes but the barest reference to them.

But when we pass beyond this general problem to others more specific, we must consider where the distinction is to be drawn between the philosophic enquiry and the scientific. It is, of course, impossible to be dogmatic here; but if we admit, for argument's sake, that the subjects discussed by Professor Wadman on pp. 206, 207, are truly philosophical, is this true also of the nature of the ether or the atomic nucleus, of Weyl's extension of the theory or Painlevé's and Wiechert's criticisms of it, or of the quantum theory or the physical mechanism of heredity? At some stage all these questions fall within pure science. Exactly where must remain always a matter of opinion; but a great part of Professor Wadman's article deals with what I should myself regard as scientific material; and we must here recall Einstein's own assertion that "there was nothing specially, certainly nothing intentionally, philosophical about" his investigation.² We may compare with this—"It would be wrong to associate any metaphysical speculations with the introduction of the four-dimensional point of view"; "the theory is physical and not metaphysical; upon what particular basis bare matter depends is a question not for the philosopher but the physicist to decide."³ We must recognize, then, that what is interesting to philosophers is not always of philosophic interest.

The rôle of "light and vision in normal experience" appears to me fundamentally important. The theoretical results (W., p. 207) are unquestionable, though to speak of a "fundamental velocity that is invariant," but which is still not the velocity of some actual entity, seems meaningless abstraction. But the question still remains—How are these results arrived at in the first instance? Upon what is "the discovery that there is a fundamental invariant velocity" based? They must be based upon observed coincidences as the content of *perceptual experience*; abolish these, and nothing remains whereon to found a theory of any kind. "We observe a

² *Nature*, 16 June, 1921, p. 504. Cf. his account of the growth of his theory in *Nature*, 17 Feb., 1921, p. 782. I may refer to the fuller discussion of these points in the current Volume of *Mind*.

³ Schlick, *Space and Time*, p. 51. Alexander, *Spinoza and Time*, pp. 39, 45.

coincidence, an event. In each several map of the universe the event is uniquely recorded as a single coincidence. The only precise observations are those of coincidences."⁴ But why, again, should "*c*" remain paradoxically invariant for all observers?⁵ Once more because the perceived light phenomena furnish the sole available means for their own investigation, while light travels with finite velocity. The physicist is here left with nothing to hoist himself by except his own waist belt; the inevitable result is invariance, and the paradox in both cases is merely apparent. So far as the *indispensable initial observations* are concerned, therefore, it is the non-existence of any phenomenon which can be *perceived* and compared with light signals that is fundamental. "We have not taken account," asserts Einstein in recounting the development of his theory, "of the inaccuracy involved by the finiteness of the velocity of light";⁶ "if some new kind of ray with a higher speed were discovered, it would perhaps tend to displace light signals and light velocity."⁷ Finally, if we assume gravitational impulses arising which had an *infinite* velocity, and also that we could directly perceive their effects,⁸ relativity phenomena might be excluded from consideration altogether.

In conclusion, what Professor Wadman calls my "exposition of the transformation in terms of sound" (p. 206) was offered as nothing more than a somewhat crude illustration based on "familiar occurrences." When the article was written many readers found an insuperable difficulty in discovering analogies to the new theory in ordinary experience. It still remains true, I think, that to them Professor Wadman's concise outline would have been incomprehensible. I certainly did not regard it as a wholly satisfactory substitute, and the "Prince of Denmark" note merely emphasized the insufficiency of the analogy; it is unfortunate that no precise parallel can be offered; but the actual phenomena are, of course, unique; "*c* plays a unique part in Nature."⁹ Professor Wadman suggests that my imaginary observers should be "lacking in other respects than eyesight" (W., p. 206); but as they already derived

⁴ Cunningham, *Relativity and the Electron Theory*, pp. 93, 126. Cf. Brose, *The Theory of Relativity*, p. 14; Eddington, *Space, Time and Gravitation*, p. 87. Both "coincidence" and "observation" are fundamental.

⁵ I omit gravitation for brevity.

⁶ *The Theory of Relativity*, p. 10. Cf. Campbell, *Physics, The Elements*, p. 552.

⁷ Eddington, *Space, Time and Gravitation*, p. 60.

⁸ An assumption on all fours with Professor Wadman's hyperesthesia, p. 206. The infinity of gravitational transmission is, I think, still an open question.

⁹ Schlick, *op. cit.*, p. 15.

"all their knowledge *solely from hearing*" (p. 212) it seems to me that any further loss would reduce them to helpless dependence on their "unconscious"; or, at the most, transform them into behaviorists.

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BOOK REVIEWS

Psychologie der Kunst. Bd. I. RICH. MÜLLER-FREIENFELS. Leipzig: B. G. Teubner. 1922. Pp. viii + 248.

The first edition of this book appeared in two volumes in 1912. The present revision has been so thorough and the changes in both form and content are so numerous that it seems almost like a new book. The arrangement of the topics is somewhat different, much new material has been added, some of the latest theories and tendencies such as the Freudian have been considered, more examples have been used and a few illustrations of paintings, designs and music are now included. Above all the esthetic principle of unity is more closely followed in the composition so that the text holds together, a factor which considerably increases the pleasure of the reader.

It would be tedious and unprofitable to give a detailed enumeration of the changes that have been made. I will, therefore, describe briefly the more important ideas even though some of them have already appeared in the first edition.

The author takes exception to a theoretical, philosophical discussion of esthetics in the belief that the only method to be pursued is an empirical, psychological one. Although I agree with him in general in his remarks about methods, I do not think he is justified in his statement that possibly the questionnaire method is more important than the experimental procedure. In psychology the results of questionnaires are of doubtful value. The situation is worse in esthetics especially when the questions are sent to artists. Experience soon teaches one that what they say about their methods and feelings has frequently little relation to the actual facts. Even the descriptions by authors of their methods of work, such as Poe's account of the composition of the *Raven*, can not be accepted uncritically.

The author accepts the traditional, philosophical definition of an esthetic object, namely, one whose value is self-contained (*ihren Wert in sich selber trägt*). Later, however, he broadens his concept by adding the physiological interpretation that in the perception of beauty there is an adequate reaction of the organism, which is productive of pleasure.

Art is carefully defined and shown to be a special type of beauty differentiated from the rest of the field of esthetics by the presence of form. Simple colors are not yet art because they lack form and the perceptions through the lower senses are not art because they lack permanent form. Undoubtedly these are practical distinctions, but theoretically one must take exception to the statement that single colors lack form, for there is a relation of hue, saturation and brightness in every color, which gives it a form quality. The author also maintains that there are certain forms of art, such as statues of emperors, religious pictures, *etc.*, which are not esthetic objects. After all is this not a superficial distinction? Whether these are esthetic objects or not depends upon the state of mind of the observer. Notwithstanding their original purpose, such objects may very well be enjoyed later for their intrinsic beauty, if they happen to possess that quality.

Considerable space is given to empathy and motor responses and the importance of such responses is strongly emphasized, although the author is conservative to the extent that he does not believe that empathy is essential to art appreciation. The balance is, however, tilted in the direction of empathic experience, which fact is interesting in connection with the recent attitude of Mr. Bullough in brushing aside the entire question of empathy with the remark that the theory of empathy was disproved some years ago by psychologists.

Dr. Müller-Freienfels describes the various imaginal types, such as visual, motor, *etc.*, and gives examples of some of them. The visual type, for example, is illustrated by a picture by Monet and the motor type by one by van Gogh. Throughout the book, however, the author refrains from stating what types and attitudes are intrinsically esthetic. Judgments of values have been left for a second volume. In this book there is merely described the state of mind of the man who thinks he is an artist or passes for one, and the individual who at least uses esthetic terms, even though his judgment may not be based on a truly esthetic experience. For instance, the author quite rightly believes that both the emotions and the intellect are involved in an esthetic reaction, with the emphasis as a rule on the emotions. He divides individuals, however, into two types, the empathic and the contemplative, and some of the descriptions of this latter distinctly intellectual and reflective type seem to me to refer to the critic rather than to the one who is *enjoying* beauty. It is stretching the term to call the cold-blooded reasoning of the critic or even his reflections upon his own mental and emotional processes an esthetic experience, although

such an attitude often passes for the enjoyment of beauty and, therefore, with the utmost catholicity is included by the author in his classifications and descriptions.

There is an extensive discussion of feelings and emotions, which is rather antiquated and probably the least valuable part of the book. The author has tried at all times to be empirical and that he often falls back upon an analysis of his own mind rather than refer to experimental results is due not alone to his lack of knowledge of some of the more recent experimental researches, but also to the fact that in experimental esthetics psychology has still a large, unploughed field ahead. To mention two of the many problems, there is that of the consciousness of self in esthetic experience and the feeling of unreality. Both questions should be submitted to further experimentation. Mere discussion will not decide whether Lange is correct in his contention that the feeling of unreality is essential to art appreciation or the author in his belief that art is not unreal but a-real.

The book is useful both for the study and for the teaching of esthetics and even those who are already familiar with the first edition will find this revision profitable reading.

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An Introduction to Psychology. SUSAN S. BRIERLEY. London. Methuen and Co. 1921. Pp. 151.

To make this review the most useful, it is well to quote from the outside title page as follows: "This book is written to meet the first needs of the non-professional students. The beginner is introduced to certain main lines of thought, based upon a biological approach to psychology and from this point of view the theory of psycho-analysis is brought into relation with normal psychology and with experimental behaviorism." The volume fulfills this purpose and is an admirable example of *multum in parvo*.

The author follows McDougall in the main, but shows an independence and clearness of thought which can express itself with simplicity. The pages abound in happy definitions causing muddled trains of thought to fall into logical orderliness with a kaleidescopic manœuvre. "The 'nature' of each creature is just the sum of those manifold tendencies to behaviour which it exhibits on each proper occasion." "When, however, displacement occurs in a form socially useful and acceptable it is now common to speak of it as sublimation from the Latin *sublimare*,—to lift up." "The 'neurotic' appears to be one who is more or less permanently unable to bear the full

pressure of real life and tries to retire from it into the world of phantasy where immediate satisfaction of desire without effort can be achieved." The word *hormone* is substituted for *libido* as being less ambiguous. Man is a "learning animal" rather than a rational one.

The outstanding feature of the work is the exposition of the unconscious as joining with the conscious in a normal procedure and psycho-analysis is shown to be simply a technical elaboration of ordinary introspective self-analysis. It is a book for the market place and the easy chair rather than for academic halls; for the man who wishes to "know himself" rather than to know what others think of him.

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The Dalton Laboratory Plan. EVELYN DEWEY. New York: E. P. Dutton & Co. 173 pp.

The dissatisfaction with existing educational practices which has developed increasingly during the past decade in this country and in England particularly during and since the War has led to a critical valuation of both the curriculum and methods. The Dalton Laboratory Plan is an attempt to overcome many of the difficulties that result from class instruction and the tendency to a lockstep method which caters to the pupil of average ability and neglects the dull and the gifted. Class instruction, it is charged, implies the progress of all pupils at the same rate and throws the responsibility on the teacher rather than on willing coöperation and independent study by the pupil. The Plan aims to train the pupil to assume responsibility for his own progress, to realize the pleasure of self-education, to organize his work and distribute his time among his required studies to suit his own needs and abilities, and to secure help from teachers, fellow-pupils, books and other resources as occasion demands. The function of the teacher is to make periodical assignments, monthly according to the Plan, which the pupil is under contract to perform. In place of class-room instruction, assignments of work from day to day, and the use of a limited number of textbooks, separate rooms are equipped with reference and other material for each subject or groups of subjects; these are the laboratories to which the pupils resort, irrespective of their class membership, to fulfil their contracts. An elaborate system of daily records, indicating progress, has been devised for pupils and teachers.

The advantages claimed for the Plan are that each pupil may advance at his own rate, that methods of study and work are re-

quired which prevail outside the school so that there is no break in gauge between life in school and life outside the school, and that the qualities essential in a democracy—self-reliance, initiative, independence of judgment—are cultivated. For the present, the Plan is not concerned with changes in the curriculum.

The method derives its name from the adoption of the Plan in the high school at Dalton, Mass. There is no evidence, however, from Miss Dewey's book that the Plan, inaugurated at Dalton in 1919, has been carried out in its entirety in accordance with the principles enunciated by Miss Helen Parkhurst and practiced by her in the Children's University School of New York. The Plan has received a greater welcome in England than in this country and has there attained the dignity of a cult in the establishment of the Dalton Association. Few educators in the United States were familiar with the Plan under its present name until it was re-imported from England, although in many of its essentials it has for some years been practiced at the San Francisco Normal School and in the public schools of Winnetka, Illinois.

While Miss Dewey has performed a useful service in thus bringing the Dalton Plan to the attention of American educators, she is, in spite of her introductory warning that "it is not possible to present it (the Plan) as a tested and proved system," too apt to become more enthusiastic than the experiment warrants. Ignoring the recent contributions of educational psychology, she generalizes too freely about the possibilities of cultivating a sense of responsibility, initiative, self-reliance, and resourcefulness in all pupils, a generalization that is not justified by the testimony of teachers and pupils quoted in the book. However alluring Miss Dewey's theory may be that "education today must consist in learning to learn, finding out about knowledge and what it is for, so it can be acquired and used when it is needed," the impossibility of achieving this task is indicated by the theory of individual differences and experience with college and university students. The enthusiastic reformer is too prone to overlook the progress, slow but real, made by the public schools, just as Miss Dewey overlooks the extensive literature of the last ten years on "How to think" and "How to study." Into some of the administrative difficulties of the Plan it is unnecessary to enter here, although the question might be raised whether a monthly contract is not as likely to militate against free development just as much as does the daily assignment. On the whole the value of Miss Dewey's book and Miss Parkhurst's experiment lies in directing attention to existing weaknesses in the schools, but salvation does not lie in any one method or in any particular experiment,

especially when it is not subjected to such objective and scientific tests as have already been devised. There is a danger, too, that in our preoccupation with the pupils' needs which results from time to time in new plans, new methods, new devices, the supreme need of education, good teachers possessing the self-reliance, initiative, resourcefulness and independence, so much desired for pupils, will be forgotten. About these Miss Dewey has too little to say, forgetting that any plan or method, strictly pursued, may without good teachers in time become formal.

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NOTES AND NEWS

The founders of Societas Spinozana solicit the interest of the public in their enterprise of promoting the study of Spinoza and of his philosophy. The society aims to be international in character. Its headquarters are at The Hague and its Curators are Professor Harald Höffding (Copenhagen), Dr. William Meijer (The Hague), Sir Frederick Pollock (London), Professor Leon Brunschvicg (Paris), and Dr. Carl Gebhardt (Frankfort on the Main).

A volume of studies (*Chronicon Spinozanum*) is to be published annually, the first of which has already appeared, containing articles in Dutch, French, English, German, and Italian by a group of writers including Höffding, Pollack, Brunschvicg, and Delbos. The annual is to be issued only to members of the Association. The secretary of the United States is A. S. Oko, Hebrew Union College Library, Cincinnati, Ohio.

A Nietzsche-Gesellschaft now follows a Kant-Gesellschaft and a Schopenhauer-Gesellschaft in Germany, with the emphasis, however, on the practical phases of Nietzsche's thought and his inspiration for the personal life. Stress is particularly laid on his "good-European" standpoint, and his separation from the ordinary political, *i.e.*, nationalistic, movements of recent times. Among the Vorstand are Thomas Mann and Hugo von Hofmannsthal. Headquarters are in Munich (Schackstrasse, 4) and an international membership is desired.

Professor A. N. Whitehead, President of the Aristotelian Society, delivered the inaugural address on November 6th, 1922, on the subject of "Uniformity and Contingency." Our awareness of na-

ture, he declared, consists of the projection of sense-objects into a spatio-temporal continuum either within or without our bodies. But "projection" implies a sensorium which is the origin of projection. This sensorium is within our bodies, and each sense-object can only be described as located in any region of space-time by reference to a particular simultaneous location of a bodily sensorium. The process of projection consists in our awareness of an irreducible many-termed relation between the sense-object in question, the bodily sensorium, and the space-time continuum, and it also requires our awareness of that continuum as stratified into layers of simultaneity, whose temporal thickness depends on the specious present. If this account of nature be accepted, then space-time must be uniform. For any part of it settles the scheme of relations for the whole irrespective of the particular mode in which any other part of it, in the future or the past or elsewhere in space, may exhibit the ingression of sense-objects. Accordingly, the scheme of relations must be exhibited with a systematic uniformity. We have here the primary ground of uniformity in nature.

THE JOURNAL OF PHILOSOPHY

THE COSMOLOGY OF WILLIAM JAMES

I

WILLIAM JAMES clarified and illumined psychology and philosophy more inspiringly than any other man of recent generations; and in doing this he furnished momentous guidance for all future efforts to solve the fundamental problems of mankind.

A proper review of James's work as a whole would justify this estimate of him; and would most richly emphasize the tribute that mankind owes to his genius. Such a complete review should be made. But it would be too long for my present space. And I will examine, here, only his main conceptions of the universe.

Two of these main conceptions James stated definitely: The entire universe is constituted solely of "one general sort of stuff." And it is a "Plural Universe." There can be no doubt that by "Plural Universe," James meant a universe comprising many minds; and as distinguished from a universe declared to comprise one "Absolute Mind." But this does not preclude the possibility that James conceived certain stuff and things to exist, not in any mind. And often he used language difficult to interpret otherwise than in accord with such a conception. True, he sometimes declared that he always dealt with "Berkeleyan things" only; and seemed by this to imply that no things ever exist save as components of one or more minds. Nevertheless, one's chief difficulty in studying James's writings is that of reconciling his many declarations.

As to what James meant by "a mind," he often used the phrase in ways implying two fundamentally different sorts of minds, or in ways hard to interpret in any one meaning. And these I now proceed to consider, inasmuch as they double the difficulty of discovering how James presumed any one mind to be distinguished from more than one, and every mind to be distinguished from every other mind—whatever the sort or sorts of minds be involved—and because they greatly increase the difficulty of discovering how James divided the "one sort of stuff" in the universe—whether wholly between "plural" minds of one sort or another, or in a way leaving some of the stuff in no mind.

One of the two meanings of "the mind" possibly implied by

James is one that he seems generally to have used when identifying the mind with what he also called "the stream of thought"; and when so using this meaning, James seems intentionally to have described the mind or stream so involved, as being constituted of stuff primarily and commonly destitute of consciousness and requiring something other than itself in order to become conscious occasionally. Moreover, James seems to have implied the quite other meaning of "the mind" only when speaking of such conscious occasions; and he deliberately declared consciousness to be a something that "comes in" at a distinct stage of biologic evolution, thus making doubtful how he conceived prior minds if he conceived any. Therefore, by way of discovering how James divided his "one sort of stuff" into his "Plural Universe" and what sort of mind or minds he did or did not wittingly conceive for that purpose, I now turn to his teachings regarding consciousness.

In James's paper "Does Consciousness Exist?" he declared that consciousness does not exist, but is an "act of addition or appropriation"; and defined consciousness to be "awareness of one's being added to that being."

One wonders how "awareness" can be "added," yet not "exist"! And as he used a certain "pen-experience" for expounding his theme, I quote what his paper says about this experience: "To be 'conscious' means not simply to be, but to be reported, known, to have awareness of one's being added to that being; and this is just what happens when the appropriative experience supervenes. The pen-experience in its original immediacy is not aware of itself, it simply *is*, and the second experience is required for what we call awareness of it to occur. It is indeed 'mine' only as it is felt as mine, and is 'yours' only as it is felt as yours. But it is felt as neither *by itself*, but only when 'owned' by our several remembering experiences, just as one undivided estate is owned by several heirs. . . . Since the acquisition of conscious quality on the part of an experience depends upon a context coming to it, it follows that (the pen-experience) can not strictly be called conscious at all."

This passage says nothing about any sort of mind; but it excites many questions. It declares that the pen-experience "in its original immediacy," "can not strictly be called conscious at all." Is it at that moment an "immediate" part of some unconscious "mind" or "stream"? Only "later," does it become "mine" and "felt as mine." What is the "me" of which it so becomes consciously "mine"? Inasmuch as, apparently, it "feels," is this "me" of itself a conscious mind? Apparently it is the "second experience" or "context" required for awareness of the pen-experience "to occur," and required to "own" and to "appropriate"

the pen-experience. But if this be the "me" that we seek, how does this "me" or "experience" differ from the pen-experience, both as regards "experience," and as regards "stuff"? If it be a context of awareness only, it can no more exist, according to James, than does consciousness. And if it be a "stuff" experience of one general sort with the pen-experience, and differ essentially from it only in performing an "act of appropriation," just what is this "second experience" that James so strangely fails to describe more definitely than as "context" and "owner"? In any case, what is "the mind" here involved? If it be just the pen-experience with awareness of its own being as the context, it does not require for this context any part of "the stream of thought" that James sometimes identified with "the human mind." Nevertheless, it is the precise equivalent of what James called "the mind" in an extremely important passage that I am soon to quote.

James, in his book, *The Meaning of Truth*, devotes a chapter to "The Function of Cognition." He starts it by staging a drama that in every virtual respect is a reproduction of that performed in expounding his doctrine regarding Consciousness. The new *dramatis personæ* are but virtually interchangeable substitutes for the old, or at least appear to be, until new questions rise. The old "pen-experience" becomes first an algebraic "*q*," then a concrete "paper-experience." And the old "second experience" or "context" (whose identity puzzled me) at least seems to make its bow merely under a new alias, "a feeling of *q*": at first, James creates it "in a little universe, all by itself"; then remarking that "there can be no 'feeling of *q*' without a *q* of which it should be the feeling," he creates the *q* that, when embodied, becomes "the paper" substitute for the "pen-experience" in its original immediacy and not at all conscious. Thus staged, here they stand, the two creations, each "in a little universe, all by itself," already for the play to begin!

Presto! Whether the "*q*" or the "feeling" pressed the button is concealed. But somehow "The Function of Cognition" presumably substituting for the old "act of addition" or "appropriative consciousness" transpires. The two creations, "the paper" and "the feeling," become "one identical fact" or "one experience" which James describes as follows: "The paper seen, and the seeing of it are only two names for one identical fact. . . . The paper is in the mind and the mind is around the paper, because paper and mind are only two names given *later* to the one experience. . . . *To know immediately, therefore, or intuitively, is for mental content and object to be identical.*"

This drama presumably furnishes a conscious mind in embryo; but it answers none of our questions and prompts others. Its last

sentence, which James emphasized by italics, unmistakably implies that unconscious experiences (like those of the pen and the paper before awareness was added to them) are mental *contents*, and are not *objects* of consciousness or awareness. But contents of what? From neither drama can one be sure that James conceived such unconscious experiences to be constituents of any mind or stream of any sort. And to be sure regarding what he conceived them to be contents of, one must study his writings more widely.

None of the quotations that I have made throws any convincing light on two great problems involved in any presumption of minds of any sort; namely, the problems of "many in one," and of "continuous existence." And in our hunt for what James conceived unconscious experiences to be contents of, let us first examine his notorious difficulties regarding "many in one"!

In his *Psychology* and elsewhere, James inveighed violently against "gluing" mental things together, for example, by "association," in pretended constitution of that unique oneness which characterizes the immediate field of consciousness of any mind. Yet James's method of enacting this oneness seems hardly to do more than substitute the word "addition" for "association" and "gluing." Nevertheless, the important facts for my present purpose are that James explicitly insisted upon this sort of unique oneness for his conscious minds (such as of which he declared, "the paper is in the mind and the mind around the paper"), but quite took for granted an equally unique though utterly different oneness of the respective unconscious pen and paper experiences; and in case that he did conceive a vast and varied manifold of likewise unconscious experiences to constitute any "mind" or "stream of thought" only parts of which should, occasionally and in successive islands, become endowed with the unique oneness of their conscious addition, he also quite took for granted whatever sort of oneness he conceived to be so constituted by that generally unconscious "mind" or "stream," thus leaving us uncertain as to how he conceived the contents of any unconscious pen- or paper-experience to be joined; as to how he conceived such unconscious experiences to be joined when forming any mind or stream; and as to how he divided his "one general sort of stuff" among "plural minds," either wholly, or with an incalculable remainder not in any mind.

The importance of these facts, within James's general teachings, is obscured within his two dramas, partly because he used only spacial experiences in expounding them; whereas, had he used a manifold of sounds in place of a pen, or of a rectangular paper, the problem of how many distinct sounds may be regarded as in any one mind or stream rather than in any other, save as the result of some consciously

uniting "act," would at least have been more likely to occur to anyone who, like James, had renounced all but empirical explanations of such problems. But because James's *q* algebraically stood as much for any unconscious manifold of sounds not displayed spacially as for any unconscious manifold of colors displayed spacially, we must ask: By what empirical right did James conceive unconscious spacially united "paper rectangles" to exist at all; or conceive numerically distinct "*q*'s" not spacially displayed to exist in any one mind or stream rather than in any other, or than in absolute separateness in no mind?

Moreover, having asked this pertinently of the problem of "many in one," there remains the problem of "continuous existence." Did James conceive all his universal stuff to exist eternally? Did he conceive the beginning and the end of whatever mind or stream he did conceive to exist simultaneously, its past and its future sections as well as his "specious present"? And if all the stream did not exist simultaneously, in what mind did James's unconscious things exist; and in what sense did their "flow" constitute either any conscious or any unconscious mind? Naïve men, rationalists, and followers of "the Absolute" at least attempt to make plain how questions like these are to be answered. But as nothing in all James's writings furnishes sure evidence for deciphering his undeniable inspiration, I now follow the only cue I can discover for guessing the root of his inveterate ambiguity—a root, perhaps, of which he was never aware.

II

Can any man escape from his environment, wholly? James was born, bred, and lived in an environment and in an age of rationalism. My cue is my suspicion that James, in spite of his utmost endeavor, never fully escaped from rationalism.

James's prime resolve was to practise empiricism only. But to me he seems never to have escaped many habits unwittingly absorbed from his surroundings and readings. Among other evidences of this he seems at will to have used his "stuff" quite as any rationalist uses "phenomena," used his "feelings of relations" quite as any follower of Mr. Bradley uses "inconceivable" relations, and used his "experiences" quite as he accused Royce of using "the Absolute" or as a "mere reservoir of convenience."

Royce "conveniently" used innumerable phenomena all eternally "supported" in the Absolute. James as "conveniently" used innumerable "Berkeleyan" and "experienced" things all eternally "existing" somewhere. But though James renounced both "the Absolute" and "the Naïve Man's World," he seems blindly to have felt no need of stating precisely where, how, or by what right he conceived

his "convenient" things "to exist," or whether in some particular mind or "*ins blau hinein*."

Royce used innumerable phenomena all unconscious of themselves and severally united into many sorts of manifolds, each by some "act" of "the Absolute." James used innumerable "experiences" all unconscious of themselves and severally united into many sorts of manifolds, unconscious pens, papers, orchestrations, *etc.* But though he renounced "the Absolute" and resolved to practise empiricism only, he seems blindly to have felt no need of explaining how these unconscious manifolds could be conceived to be united spacially, numerically, or at all, otherwise than occasionally by some uniquely adding and consciousness-endowing "act" of some empirical "me" or "mind."

Royce used phenomena as "universals"; one served for all minds—literally one it should have been, since nothing (save "transcendental egos" and "relations") could be "plural" or "different" in itself, or unless "acted upon" by some ego. James used "experiences" precisely likewise whenever it suited him to do so. In explaining *How Two Minds Know The Same Thing* he just conveniently added "the same thing" to each mind, whereupon it became known as "one and the same thing," or as "two different things" accordingly as some "me" "acted upon" the two minds in exercise of some "feeling of relation."

Followers of Mr. Bradley use his "inconceivable" relations also as "universals." James used his "feelings of relation" likewise and as "inconceivably." In his *Psychology* and elsewhere, he declared that no two experiences ever are the same, or ever are in the same mind twice, or ever are in but the one mind. Nevertheless, James permitted himself at will to transgress all these declarations. Suppose several men including James simultaneously to have seen a Berkeleyan tiger charge from its farthest visible distance to an immediate foreground! James would have said that "as mental content" or as "things in themselves" his distant experience was as "different" from his glorious-sheen-in-tawny-and-black close-up experience, as a flyspeck from a mountain landscape or a county fair. Yet in successive breaths he would have called the flyspeck-tiger and the close-up tiger "as mental object or Berkeleyan thing," now "the same," now "different," now "one," now "plural," now "the same tiger or experience in different minds," now "different manifolds of different content in different minds," and in this last he merely would have changed "different" to "the same," if occasion suggested it. Here we recall that James declared of the paper-experience that "paper and mind are only two names given *later* to the one experience"; and that he commonly

declared that the Dipper Stars of the Great Bear are seven "only when counted." And if James had been asked for his warrant for all this sort of use of his "feelings of relation," I suspect that he would have replied as "conveniently" as Royce or any other rationalist.

James's later writings are replete with, seemingly, every conceivable "*q*," "feeling of," and "feeling of relation," and with every conceivable "me" to feel them and "own" them in uniquely united oneness. They provided him with a duplicate supply competent to every possible known thing and knowing thing. And with this more than rationalistic supply, James's problems in conscious addition, unconscious division, and plural cosmology were easy. He had but to clap together some universal "pen," some "feeling of" it, plentiful "feelings of relation," and innumerable "me's" for his universal formula of pen-cognition to be complete. If it happen to be a *sort* of pen that he saw, that pricked some blind man's finger, that some babe swallowed, that Roosevelt took to Africa, and that Cæsar used in his "still sleeping" past, James had but to add so many feelings of "the same" and of "mine" in order to make five "me's" conscious of the one "universal," timelessly stuck at the "common intersection" or cross-roads of five "streams of thought" or "minds." And if in such a "quasi chaos" of feelings of "mine," "yours," "Roosevelt's," "out to Africa," and "back to Cæsar" should rise innumerable feelings of "if," "and," "but," and "doubt" regarding who is who and what is what, there was always at hand "in the rush of the mind through its world of fringes and relations" (James's words) still another feeling—the all-satisfying feeling that "Whatever a man trovest is true."

In short, James's empiricism is one that can make all the furniture of the universe unconsciously exist in every conceivable manifold, both in innumerable minds simultaneously, and successively in the ever-varying medleys of their differently "flowing streams"; can make them all "felt" and "felt" in every conceivable relation by innumerably "occurring" and conscious-endowing "me's" in each of the innumerably plural "streams"; and at will can dump them all into his genetically primitive "quasi chaos" that is indefinitely conscious or unconscious, that evolves by no definable order of logic, of biology, or of nature, and that is neither empirical nor rationalistic, while as a "reservoir of convenience" it is only ignominiously less majestic than "the Absolute."

Nevertheless, my cue has led me neither to undervalue James's work nor to exaggerate its defects. Simply he undertook a task impossible for any one man or even any one generation of men to

complete. The Naïve Man did not become the Rationalist in a day; nor will the Rationalist become the Empiricist in a day—perhaps only the Rational Empiricist, ever. James's work will be lastingly momentous to the future of mankind, however it be named. And the highest tribute that mankind can pay to his instinctively penetrating genius is now to make his prophetic darkness clear, revealing the difficulties through which he staggered toward a dawn of incomparable promise.

III

James's prime intention was to be empirical; and if my review of his work discovers it to have been successful wherever he succeeded in being empirical, and to have failed wherever he failed to be empirical, these discoveries will at least have the warrant of his premeditated judgment regarding the primary requirement of all philosophic procedure.

James began with unconscious "stuff." But no empiricist who declares that "the paper seen and the seeing of it . . . are one identical fact" can discover unconscious stuff in his own field of consciousness. To have begun empirically, James should have begun with a conscious *q*. Moreover, had he done this, he would have needed no "act" for adding awareness to the *q*. Also, having created a typical conscious *q* or "stuff-mind" in a universe all by itself, it could have remained from the beginning to the end of eternity absolutely unchanged; and this possibility should have warned James that consciousness is not likely to be any sort of "act," and that no conscious stuff-mind ever needs any "occasional" endowment of consciousness. Indeed, in any absolutely unchanging universe, no transpiring act of any sort whatsoever could be possible. Therefore, no empiricist should make use of any "act" whatsoever until he presumes to explain how one "conscious whole" is continuously succeeded by a different "conscious whole" in any sort of "stream." In any case, we discover that neither James's unconscious stuff, nor his consciousness endowing "acts of addition" have any empirical warrant.

Having wrongly begun his empirical task with unconscious stuff and rationalistic "acts" for occasionally endowing it with consciousness, James permitted himself to conceive his stuff to constitute uniquely united unconscious manifolds without need of any unifying "acts," and as no pure rationalist ever would do. That is to say, James made his *q* algebraic of every sort of manifold ever discovered in any uniquely united field of consciousness. Yet in nothing did James display his instinct for empiricism more, or

more crucially, than in pertinaciously insisting on the absolutely unique oneness of each and every "conscious whole."

Moreover, had James perceived the need of distinguishing plural minds in a universe constituted of one general sort of stuff as clearly as he perceived the need of distinguishing plural egos within the Absolute, he would have perceived that a conscious *q* mind constituted by any manifold of stuff uniquely united in a "conscious whole," once clearly conceived to be the ultimate type of all egos, minds or me's, furnishes precisely the distinction of them, one from another, never before made definitely conceivable.

In the precise meaning that the manifold of each stuff-mind is "one conscious whole," plural stuff-minds are not "one conscious whole." The absolutely unique junction of stuff in one conscious whole is the indispensable and ultimate distinction of a stuff-mind; the absolute absence of any such junction between them is the indispensable and ultimate distinction of plural stuff-minds; James's unconscious stuff had no empirically warranted junction or disjunction; and neither any unconscious mind nor any unconscious stuff has any empirical warrant.

Every abstract prime, causal or logical, is pure algebra, till "stuffed." "Soul," "ego," "center of apperception," "energy," "unconscious space," every sort of "me," "thing," "act," and "relation" is pure algebra, till "stuffed." And if there be anything "Unknowable," these unstuffed things should have been the "unknowables" of Kant and Spencer—not the stuff that in a conscious whole is the only sort of "knowable" of which any "mind" is ever empirically conscious. This is what James blindly struggled to say, but perpetually contradicted.

James also insisted pertinaciously that each conscious field "as a whole" is continuously followed by each succeeding field "as a whole." But had he not conveniently and virtually conceived his conscious stuff and things to exist eternally, his simile for the mind would not have been a "stream of thought," but a movie-show—a movie-show mind, all of whose past contents have ceased to exist absolutely, all of whose future contents do not yet exist, and whose present field is absolutely all that any mind, ego, or me, ever empirically is—a movie-show in which each momentarily existing "whole" transforms absolutely and continuously to the next following "whole."

Such a mind is not without mysteries. Conscious existence is a mystery, but unconscious existence is a greater and added mystery. Conscious unity of any manifold is a mystery, but any sort of united unconscious manifold is a greater and added mystery—including alike that of any unconscious "stream of thought" and that of any unconscious space. Absolute transformation of any whole, or of any

part of any whole, is a mystery, but it is less a mystery than any sort of "gluing," either by unconscious space or by any rationalistic "act." The continuity of this absolute transformation is a mystery, but it is less a mystery than either an eternal atom, or any "un-stuffed" ego, or anything that is always both "the same" and "different."

A conscious unity of manifold stuff, absolutely and continuously transforming! This is the typical mind that James's titanic struggle reveals, when stripped of rationalistic ambiguities. Its mysteries are the simplest and fewest of ultimate mysteries; no others are needed. It suffices for his "Plural Universe," "all of one general sort of stuff." It suffices for science, without the added mysteries of "an unconscious spacial plenum," and without ignoring all that psychology and philosophy have ever accomplished. It suffices for psychology, without any multitudinous and insolvable algebra of unstuffed "faculties," "acts," and "relations." And it suffices for all philosophy or cosmology, without any "reservoir of convenience" filled with Unstuffed Unknowables.

IV

But how can any such Jamesesque mind know any other such mind, or what other such minds of various species constitute the plural Universe? For this question, as for all exact discussion of cosmology and of epistemology, mutually exclusive definitions of "conscious" and "know" are indispensable. Therefore, for my present writing, I dogmatically declare that the proper meaning of each of these two words is absolutely unique, and different from that of the other. Every mind is conscious of its present, consciously united self and never is conscious of anything else. Every mind knows other things, but never knows its present self.

I have spent years in completing for publication an epistemology conforming to this dogma. But for present writing, I simply declare that any mind knows its past, knows any other mind, knows any part of any other mind, and knows the species of any other mind all in one general way that has two modes, instinct or intuition, and reason or inference.

James refused to infer that the atoms, ether, and vast plenum of modern physics exist—"as yet" or otherwise than as "permanent possibilities" and "conceptually." He refused to infer their existence even in any guise of his mental stuff. Nevertheless, he explicitly declared for mental genesis. He himself suggested that spacial existence has some sort of genesis from "crudely voluminous" existence. And as the result of this suggestion, the progressive genesis in

each human mind of homogeneous undifferentiated existence or "presentation," to numerical presentation and thence to spacial presentation all by one common law of conditional growth, now stands unchallenged, save by human inertia. All alike are warrants of inference, and are as truthful warrants for inferring something, essentially replacing the entire plenum of present physics, as for inferring the mind of one's wife or son.

James's vision of the human mind was clearer than that of any previous man. But his vision of the universe was densely fogged by his rationalism. His type of universe, like that of every rationalist, is rooted in the ancient belief that "Man's soul is the center and image of God's purpose." He, like Fechner, conceived the planets to be godlike minds; but he was intolerant of existing atoms, and would have been horrified at evolutionary minds that, like his "mind around the paper," should essentially embrace the great nebulae and vast interstellar spaces.

But why should any man any longer refuse to infer something in some species of mind from the entire gamut of our Berkeleyan experiences? How can any scientist now fail to do this, unless to be a scientist is to be unmindful of all that psychology and philosophy have accomplished? And how can any psychologist or philosopher now fail to do this, unless to be a psychologist or a philosopher is to be unmindful of all that science has accomplished?

Previous to Berkeley, all men and all animals instinctively lived by this sort of universal inference, and doubtfully could have evolved without this instinct. It has the warrant of the entire biologic instinct of the ages. And its abandonment by modern rationalism has no other warrant than Man's sophisticated exaltation of his own image.

Once accept James's Plural Universe all of one general sort of stuff, and the Jamesesque mind, patiently understood, becomes the sufficient warrant to future cosmologists for inferring how one mind knows any other mind, what species of minds exist, and what sort of consciously united manifolds constitute each of these species.

V

James did more for solving the future problems of mankind than his school, let alone his generation, yet appreciates. The only adequate memorial to his genius can be to complete his marvellously prophetic vision.

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THE CONCEPT OF SENSATION

WHILE a large amount of excellent research work has been done in investigating the functioning of the various special senses, the status of sensation in general is far from being clear. Its various alleged attributes, in terms of which it is in fact defined—quality, intensity, extension, duration, clearness, order, texture and the like—are not well defined. Indeed, there seems to be no immediate prospect of securing agreement even as to the number of such attributes. So if we ask what sensation itself is, no clear and reliable answer appears to be available, and the whole subject is characterized by subjective opinions rather than objective certainties. For structural psychology at any rate, this is a serious matter. Indeed it would not be too sweeping to say that the whole progress of the science is in jeopardy. For instance, the theory of perception is left without a solid basis, a situation perhaps particularly obvious when we consider the numerous attempted explanations of the perceptual illusions whose lack of finality arises from their seeking to analyze these experiences into sensational elements whose own nature is not clearly known. A breakdown in our understanding of the nature of sensation inevitably invalidates a large part of structural psychology.

The view which I wish to propose in the following pages, and which I think can be made a consistent part of a constructive psychological scheme, is that by sensation we mean what I shall call receptor response. In a moment I shall explain and seek to justify the use of this term, but to make clear what I mean, let us apply this suggested characterization of sensation to one or two of the fairly numerous borderline cases which, on purely introspective evidence, it is difficult to classify as sensational or perceptual. Is vocality, for example, an attribute inherent in auditory sensations, or is it something superadded, something read into the bare data of audition? The view which I advocate offers us a perfectly definite systematic answer: vocality is sensational if it arises out of specific changes in the receptor, and otherwise not. Or again, consider the local signs of visual sensations. Are these sensational or not? Again, our clean-cut systematic answer is that they are if they arise out of some specific condition in the visual receptor, and that they are not if they arise out of conditions in the centers or in other, non-visual receptors, *e.g.*, the kinesthetic receptors. These instances will serve to show my meaning when I define sensation as receptor response.

In making use of the term receptor response I am employing a concept which so far as I know has never been isolated in current behavioristic discussions, though it is implied in them. Perhaps I can best dem-

onstrate its consistency with the behavioristic point of view in general by reviewing the treatment of sensation which is offered by the so-called "extreme" behaviorists, a treatment which seems to me radically defective. John B. Watson proposes in effect to give up the concept of sensation altogether and contends that all those differences which structural psychology interprets as inherently sensational can be dealt with as differences in effector response. Rather crudely put, his suggestion would be that a difference such as that between red and green depends upon the fact that light of one wave length impinging on the retina causes the response "red," while light of another wave length causes the response "green." I would like to call attention to two closely related difficulties to this account. First, it hardly seems to meet the facts. Vague and unsatisfactory as the structuralist view of sensation differences may be—and I for my part must indorse Watson's criticism of it—it does at least recognize sensations as ultimate and irreducible qualitative differences, and so far at least it seems sound. That there are such differences in our mental life, differences which can not be resolved into anything else, seems a plain fact to which no general prejudice against the introspective method ought to blind us. Thus it is that the attempt to interpret what the structuralist calls sensation differences in terms of differences in effector action appears to be an over simplification at the expense of reality. The second objection is that Watson operates with a conception of response that is far too narrow—which is, indeed, the ground of his failure to deal adequately with the facts of mental life. For him response is nothing but end-result. Now light of different wave lengths might set up completely different retinal processes or completely different neurograms without registering in different end-results. If this were the case, still on Watson's theory, the organism would remain unaware of the difference in color, simply because the difference failed to register in its muscles and glands, surely a paradoxical result.

Evidently what is required is a more inclusive definition of response. Why should objective psychology, which sets out to offer explanations in terms of organic behavior, limit itself to explanations in terms of effector action only? There seems no reason whatever for dividing the effector-receptor circuits at some arbitrarily chosen point, whether just back of the effectors or elsewhere, and saying that everything on one side of the line is response while everything on the other side is not. It is no plea in favor of hypothetical brain schemes to urge that objective psychology must take account of all and not a mere part of the facts of organic life. The critical point, the point where essential differences actually arise, is not between receptor tissue and neural tissue, nor between neural tissue and

effector tissue, but between the organism as a whole and its environment. All that the organism does on the cues of external stimulation is in the nature of response. As I have argued more fully elsewhere¹ we can not separate out from behavior either central processes or receptor processes, and must think of response as any bodily change brought about by external stimulation.

Clearly the immediate consequence of this is the consistency and tenability of the concept of receptor response, though we must recognize it under certain conditions which will be discussed later. But in any case it is a tenable notion. And, furthermore, it is of great value in clearing up the whole doctrine of sensation differences, for it makes possible an objective account which recognizes the very fact which Watson tends to ignore and which the structuralists take into account, the fact that what are called sensation differences are ultimate and can not be explained in terms of anything else.

I turn now to a more detailed consideration of the view of sensation as receptor response as it applies to a number of closely related psychological problems.

1. I begin by considering the nature and status of so-called simple unitary sensations. That this is a point at which introspective psychology finds itself in difficulties is evident from the widely varying estimates offered of the total number of possible sensations. Such lack of agreement can be symptomatic of nothing but ambiguity in the conception of simple sensation itself. Can the theory here advocated throw any light upon this matter?

Here at once we come upon what seems at first sight the most paradoxical consequence of the view that sensations are nothing but receptor responses. For it is obvious that unless the afferent and central fibres are in working order, changes in the sense organ do not register at all in mental life. Take an individual whose optic nerve has been damaged without any injury to his eyes. Light will set up the regular retinal changes, as far as we know. That is, there can be receptor responses, which on our definition are sensations. But he will still be blind. Now this result is due not to a fault in the theory, but to the ambiguity of the word sensation. Let us keep constantly in mind its identical equivalence, for us, to receptor response, and the paradox is no longer very troublesome. When we say that a change in the sense organ must set up changes in the central mechanism in order to "register," what do we mean? We mean that the receptor response becomes integrated as an element in the total behavior of the organism, while if the neurones are so affected that it does not "register," we mean that it does not

¹ "The Stimulus Response Relation," *Psychol. Rev.*, Vol. 29, No. 2, p. 152.

become so integrated. For us the prime work of the whole nervous system must be integrative. Now behavior psychology operates in terms of total response. This, indeed, is its difference from physiology. Thus our conclusion is that unintegrated receptor responses—simple sensations in isolation, to use the traditional terminology—are entirely beyond the realm of psychology. The point is not that as a result of education and sophistication we always add to and interpret our simple sensations. Rather it is that for the normal individual, with his receptors in structural and functional contact with the neural mechanism, isolated simple sensations are impossible, and that when they do occur owing to accident or injury, they play absolutely no part in total behavior or mental life, and are mere physiological curiosities.

Here, of course, we come upon the explanation of the difficulty found by introspection in separating out and counting simple sensations. The actual material open to introspective survey contains no free simple sensations. It does not even contain complexes made up of nothing but simple sensations. It consists of sensational elements, to be sure, but these are organized into very elaborate complexes, and bound up with non-sensational elements. So it is that all structuralistic attempts to show how mental functions can be analyzed down into series and constructs of simple sensations are bound to fail simply because the underlying organic conditions of mental life are such that mental functions, to exist and occur at all, must involve more than receptor responses. Simple sensations, or isolated and unitary receptor responses exist, and exhibit ultimate and irreducible differences, but they do not exist in isolation, and the psychologist can not deal with them by themselves.

2. This leads me to the problem of perception, and more specifically of the perception of space and time. Perceptual knowledge is defined as consisting of complexes made up of sensations and nothing but sensations. But if we regard sensations as receptor responses it becomes clear that such complexes in fact never occur in mental life. We might, it is true, have a number of responses occurring simultaneously. But this in itself would not constitute perception. It is necessary that the various incoming impulses be integrated at the centers; and if we look at the matter from the point of view here advocated it is evident that this condition destroys the purely sensational character of the complexes which result. The bringing together of various incoming impulses, as we have in effect indicated, must be interpreted to mean their integration into the warp and woof of total behavior. That is, the organic conditions which the structuralist rightly thinks of as necessary

for the occurrence of perception, more correctly understood imply that we never have pure perception at all, that the alleged sensation complexes are in reality much more complicated and heterogenous, consisting of both sensational and non-sensational elements.

The point is especially clear when we consider our alleged perceptual knowledge of space and time, which is supposed to be built up out of visual, tactual, kinesthetic, somatic and other sensations. But the idea that sensations are self-sufficient self-existent atoms of knowledge which contain the primal stuff from which is elaborated our awareness of the space-time manifold and which can be combined into various patterns by the central nervous system is not tenable. On the one hand, a mere sensation in and of itself is not knowledge at all, for it plays no part in mental life. And on the other hand, the central mechanism does a great deal more than recombine the data from the receptors. It consolidates receptor responses with mental life in general. There emerges here a suggestion of the right direction in which to look for constructive solutions of the problems with which the structuralist attempts to deal in the psychology of perception. For it appears that our awareness of space and time is not something special and definite, a special kind or texture of sensations, but that it is simply our skill in making gross motor and bodily adjustments to the environment.

The general conclusion to which we are driven here is that in spite of the fact that we can retain sensation in a strictly behavioristic scheme, we can not retain perception. We agree with the structuralist that sensations are ultimate and irreducible differences. But we do not in the least agree that they can be regarded as self-existent atomic entities out of which more complex knowledge structures can be built. As receptor responses they have no meaning in mental life except when integrated with behavior as a whole by the action of the central mechanism, and in this case they become consolidated with non-sensational elements from which they can never be disentangled.

3. Finally let us consider the status of imagery and the alleged imaginal content of thought. I shall not raise the question as to whether imagery exists or not, for to deny it as certain behaviorists do seems to me a flagrant contravention of plain fact in the interests of a theory. The matter that is of interest here is its relation to sensation.

Let us assume that imagery is constituted by activity in the eenters. To what extent, if at all, may we expect to be able to correlate it to sensation? First and foremost there is every reason for believing *a priori* that we ought to be able to assimilate imagery to the

various special senses, so that we can speak intelligibly of visual, auditory, kinesthetic and tactile imagery, and so forth. The mere fact of the functional localization of the central mechanism seems decisive on this point. A visual image will arise out of activity in the visual areas; an auditory image out of activity in the auditory areas, and so forth. But beyond this we may not be able to go, for there is a profound organic and functional difference between imagery and sensation, the latter being constituted by change in the receptors and the former by change in the centers. Here I think we are at the source of introspective difficulties with imagery, for attempts to work out any thoroughgoing correlation between the characteristics of imagery and sensation seem to be erroneous in principle. The more constructive attempt would be not to analyze it into sensationalistic equivalents which it does not and can not possess, but rather to deal with it in terms of its influence on general behavior.

The consideration of imagery suggests a mention of the question of the alleged imaginal content of thought. The most serious systematic argument against imageless thought is that the doctrine seems to involve us in the paradox that thinking is a sort of vacuum, a process where nothing happens because there is nothing there, but which still gives us tangible results. Now from the introspective point of view the only concrete reals in mental life are sensations and sensation-like images. Hence we derive the view that all thought proceeds by means of images. Obviously, however, the concept of sensation which I have advocated forbids us to deal with thought as a succession of sensation-like contents. But it does more than this. It supplies an adequate alternative to the theory of imageless thought by showing how we may regard thinking as a series of concrete happenings, though not a series of contents. We agree with Watson here that thought is a sort of action, though we do not necessarily limit it to laryngeal work. Sensations and images are actions too, and thought may or may not involve either of them together with other types of activity as well.

I close with a word on the systematic significance of the considerations here worked out. It will be observed that I have used a number of ambiguous expressions throughout this entire discussion. I have spoken of sensations "registering" and of "mental life," terms which suggest the introspective point of view. This has been done quite deliberately in the belief that it simply does not matter. With introspection as such, we can, I think, have no quarrel, for science can not afford to repudiate any method which may lead to the discovery of any modicum of fact. What we do quarrel with, however, is the imposition of ill-defined theories upon introspective data.

In particular, psychology must avoid two extremes. On the one hand, an objective scheme is under no obligation to find equivalents for all structuralistic conceptions. A behaviorism which is nothing but a forced translation of structuralistic theory is nominal only. Objective psychology must work out its own system in its own way, and that system may or may not have points of contact with others that have been proposed. As we have specifically seen here, the theory of perception can have no place in such a system, though of course the facts which the theory of perception attempts to explain must be considered. On the other hand, we must not ruthlessly reject all the notions of structural psychology merely because we find the introspective method irritating in certain cases. Specifically we have seen that sensation has an objective meaning. To be of any value, behaviorism must stand on its own feet and work out its own conclusions without prejudice either for or against any other scheme.

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IS CONSCIOUSNESS PHYSICAL?

IN his recent article, "The New Materialism,"¹ Professor Pratt has seen fit to include me among the materialists. To this I have no objection so long as the classification does not shut out from view what I regard as novel in my outlook. Historical forms of materialism have always been weak in their epistemology and in their handling of the categories. For this reason I have preferred the more general term "naturalism" which is, as it were, still in the making.

But when I come to the content of his exposition and criticism, I discover that he has partially failed to see the implications of the epistemology which we supposedly have in common. I hasten, therefore, to make my reply in order that others may not be misled. My argument is necessarily complex and involves some measure of subtlety. Were this not the case, I would hardly expect it to offer a solution of such an age-old puzzle as that of consciousness and brain. I shall summarize my position and bring out its principles, and then I shall answer Professor Pratt's objections.

I

The essentials of my position can, I think, be summarized under the following six points:

1. Consciousness is a term for the compresence of contents which

¹ This JOURNAL, Vol. XIX, No. 13.

each of us has as his field of experience. Particular elements of this field are called states of consciousness or psychical. This compresent complex has an empirical structure characterized by the distinction between the self and what is presented to the self. Naturally, though unfortunately, consciousness is also used as a term for awareness, which is the felt presence of contents to the self's inspection, a development within consciousness as a compresence of contents. In what follows, we are concerned primarily with the nature and existential locus of the elements of this complex. Are these elements physical?

2. The elements of this complex are given, experienced or intuited in a way impossible for physical things. Physical things are objects of perception and knowledge but this knowledge is mediated by contents, that is, these objects are affirmed and interpreted in terms of these contents. In ordinary perception, this is done uncritically; in science, information about physical systems in terms of position, mass, energy, structure and behavior is worked out. My argument demands that the exact nature of this knowledge be understood.

3. The contrast between the elements of consciousness and physical things has a threefold origin: (a) epistemological, (b) categorical, and (c) theological.

When I say that a sense-datum of mine is not physical, I may mean that it is not a part of the particular physical thing which I know by means of it and which I may first have identified it with. To call it psychical in this connection is to assert that it is *subjective* and bound up with my organism, that it is not out there where the thing is. This contrast tells us nothing about the relation between the sense-datum and the percipient organism. It does not imply a difference of substance, a metaphysical dualism. Since the datum is compresent with images, meanings, and feelings, the whole complex is thought of as alike in status and nature. Its existential locus is a problem.

But when I say that a sensation or image or feeling is not physical, I may have another context, the categorical. I mean that the categories of my knowledge of the physical world do not seem to apply to these entities. I do not know them in the same way that I know physical systems nor do my categories cover them. This is the categorical or metaphysical setting of the problem. But what does it signify? Simply what the first did, *viz.*, that these are subjective elements internal to the organism and not themselves *total* physical things. The relation can not be one of simple equivalence. But are there not other possibilities? Must we not explore the relation of whole and part? It is this that materialism always tried to do, but

clumsily, because it had no clear epistemology and no logical acuteness.

The third motive to the contrast between consciousness and the physical was the theological. This was external and irrelevant and produced the disastrous metaphysical dualisms of the past. Consciousness was made a function of a soul distinct from the body. I can not find any empirical motive for this solution in the facts themselves. Yet I can not help feeling that it is in the background of Professor Pratt's mind.

4. Now as a critical realist, Professor Pratt should have appreciated the emphasis which I put upon the two kinds of knowledge as the key to the solution. In fact, I called my solution the double-knowledge view of the mind-body problem. We have knowledge about the brain in terms of the physical categories and we inspect the contents of consciousness or else feel them. This difference in kind of knowledge should, alone, make us aware that simple equivalence is too facile a solution.

5. What is another possibility? May not a content of our consciousness be a peculiar part of the functioning brain? And here again we are assisted by our epistemology. If the relation of whole and part is thought of in terms of our knowledge of the physical world, it takes the form of spatial whole and part, as a pea is in a pod or an atom in a molecule. But consciousness is not thus known. Hence it should not be so thought. What other relation of whole and part can we conceive? It seems to me that the relation of structure or quality to that which is structured or qualified gives us a suggestion. The case is by its very terms unique. Consciousness is something given; it is a reality, while we have only knowledge of the physical world, no participation in its very stuff unless consciousness be a partial participation. But we have seen that a simple identification of an equivalence sort is out of the question. To express the situation, I have called the psychical a variant. It is a variant as structure is a variant, but it is other than structure because it is a flash of the content of the brain. Thus I hold consciousness to be physical in the sense that it is an internal character of the functioning brain, though it is not a complete physical thing to be known externally by the sense-data it arouses.

I maintain that this interpretation satisfies the epistemological and categorical motives. And if critical realism is to appeal to contemporary thought it must have some such solution of the status and locus of the psychical.

6. But is consciousness efficacious? Is interactionism with its dualistic implications the only possible kind of efficacy? The principle I have adopted is that consciousness must have an efficacy cor-

respondent to its nature. Interactionism is not true to this principle. It wants to give consciousness powers which it does not appear to possess or to turn the efficacy over to a soul created for the purpose. I need not enlarge upon the difficulties interactionism has always faced.

What can the inactive contents of consciousness do? They can guide and give warning. How guide? Not by controlling neural processes from outside in a dynamic, pushful way, but by being the focus of the neural process and thus assisting discrimination. Frankly, I can not comprehend adjustment to complex situations without such an instrument for summing up and comparing factors. When I reason I think of my brain as making an adjustment by means of its abilities, using as intrinsic summaries and guides the contents which I am aware of using.

To this suggestion I know what the reply will be. We are so accustomed to think of the brain in terms of the information furnished by physical science that we mistake its reach and suppose that it exhausts the brain. The truth is that the brain should be thought of as the brain-mind. We impoverish nature by identifying it with the skeleton which science deciphers. The brain has a "content of being" which physical science can not intuit and which it tends to ignore. A psychical content is a qualitative dimension of the active brain-mind integral with it.

II

Let me now reply to Professor Pratt.

His first objection is that I have two variants and have the problem of bringing these into relation. Now, so far as I can make out, his belief that I accept two variants, consciousness and brain activity, is due to his misunderstanding of the categorical motive which I solve by the double knowledge. As classes thought about they are distinguished, but do they exist in this fashion? The brain is known in two ways: one is knowledge about and the other is participation. But the reach of these two ways is not equivalent; hence the two logical classes. But, existentially, consciousness is a participant in and part of the neural process. Suppose Professor Pratt granted this situation, he would see that the categorical contrast would follow. I conclude that his dialectic is misplaced.

But why do I not call consciousness a form of energy? This is the only way out of the difficulty that Professor Pratt can think of. My reply is that energy as a category of science is a term for a quantitative measurement of the power to do work. Here again we are confronted by the double knowledge of the brain. To call consciousness which we immediately experience and participate in a form of energy

is to mix knowledge with reality. Since I identify brain and mind, I am willing to speak of neural or mental energy. I am willing to speak of consciousness as a qualitative ingredient in the discharge of neural energy. But to speak of consciousness as a form of energy is to me rather meaningless and betrays the sort of outlook which used to speak of consciousness as a mode of motion. That things move is knowledge about them. That they are active in a measurable way is knowledge about them. I fear that Professor Pratt wants me to be as naïve in my epistemology and handling of the categories as the older materialists.

One final point: "Professor Sellars does not seem to realize that the ultimate difficulty of materialism lies not in the kind of physical laws which it sets in absolute control of mind and human behavior, but in setting any physical laws in absolute control." But laws are our human formulations of how things behave. Laws do not control things; they control themselves. And when I recognize with behaviorism that mental laws are physical laws, that is, that we can know the mind by its behavior and that the laws of introspective psychology only supplement these, I no longer have the objection to physical laws; I no longer think of them as laws of mechanics alone. But if Professor Pratt wants the mind to be lawless?

I conclude that I do not believe that I am guilty of the traditional blunders of materialism and am not impaled on both horns of Professor Pratt's dilemma. Consciousness is physical and extended, but is not a *spatial part* of the brain.

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BOOK REVIEWS

La Mentalité Primitive. L. LEVY-BRUHL. Paris: Alcan. 1922. Pp. iii + 537.

La Religion et la Foi. HENRI DELACROIX. Paris: Alcan. 1922. Pp. xii + 462.

This very interesting volume continues the author's earlier work in the same field, *Les Fonctions Mentales dans les Sociétés Inférieures*. In the present work, M. Levy-Bruhl is primarily interested in the attitude of so-called "primitive" people toward what we are accustomed to call causality, and in showing that what has made "primitive" folk seem so often incorrigibly ignorant, superstitious, and fantastic is their entire confidence in their own metaphysical explanations.

The work is what works in this field necessarily are, an extensive collection of the observations and reports of travellers, explorers, and

missionaries, not cited in support of an unduly definite thesis, but left to speak for themselves, though classified for the sake of order under the chapter headings of a dozen chapters. M. Levy-Bruhl is no doubt right in believing that the manners and practises of "primitive" people have been greatly misunderstood because observers of them have naturally enough interpreted these in terms of their own categories. The great difference between uncorrupted tribesmen and ourselves to which the author calls attention is, as I have said, in the matter of causal explanations. It is like the difference between the explanations of an epidemic by a sincere and consistent Christian and by a well-informed materialist;—the former may attribute the epidemic to the will of God while the latter attributes it to polluted drinking water. Obviously if God wills it he may work His will by means of drinking water or of anything else; it is idle to be curious about secondary causes when the primary one is uncontrollable. What we call physical causation is something the "primitive" never thinks of, or to which he is very indifferent.

The person who has what we call intelligence lives in a world in which he believes the near and the immediate to depend on the more remote both in time and space. What is important belongs to the world of causes; they it is that must be respected; it is with reference to them that behavior must be orientated. But these causes are physical causes of like nature with their physical effects. The "primitive" lives, as we have been often told, in a totally different world; his world of causes is a world of invisible occult powers, the irritable and irresponsible dead, more or less undeveloped gods, a mysterious causality resident in omens, the magical and terrifying power for evil inhabiting the sorcerer, perhaps quite unknown to him. These are the real causes, and they manifest themselves in all sorts of ways. Details of physical causality are irrelevant. "Accidents" do not exist. Events in any way unusual reveal the operations of dangerous powers, and lead the natives concerned to extravagant and destructive methods of defense. Under these circumstances, natives can not learn from experience. Crocodiles and leopards are believed to be naturally harmless; if a native is attacked, it is because a sorcerer has made the leopard or the crocodile his instrument. The problem is to discover the sorcerer as a modern sanitary engineer would look for a source of contagion. Where a human enterprise succeeds, it is probably not by virtue of experience, skill, and persistence, but because of an effective "medicine." An enemy can be defeated not by greater courage and better tactics, but by using a stronger "medicine" than his opponent can use. Some natives are slow to learn to use firearms because they will not take aim, and because they have no conception of the possible range: the bullet pur-

sues the flying game and is bound to catch it. People may be answerable for what they have done in a dream, or for what they have wished either dreaming or awake; the dream deed is a real deed and the wish is a real cause. The Creek Indians planned to strike a mortal blow at the Blackfeet. Before starting on their campaign they practised every sort of magic to make sure of success. It was decided to put a blindfolded young Indian girl at the head of the army to guide it. Thus they set out, going one day toward the north, the next toward the south or west, for the war manitou was supposed to be leading them (p. 372, quoted from P. J. de Sonet S.J., *Voyages dans l'Amérique septentrionale*, pp. 150-152). White men, on their first arrival, are supposed to be the dead returning, and the goods they bring with them are made by other dead at the bottom of the sea. Dreams are adventures of the "soul" or revelations from the occult powers. Natives are quite ready to prove their innocence by the ordeal of poison. They believe unquestioningly that the ordeal can be depended upon while they know that the testing of their fellow tribesmen can not (p. 245). The truth is, they know nothing of the physical action of poison. Such illustrations of what looks like spontaneous and innate supernaturalism could be continued indefinitely.

A reader wonders, of course, whether the vocabularies of the observers really translate the native terms, and M. Levy-Bruhl puts us on our guard. If the natives misunderstand the missionaries, the missionaries are likely to be ill qualified to understand the natives. M. Levy-Bruhl pleads for better qualifications in this respect. The "primitive" races are rapidly disappearing or becoming corrupted and diseased.

If the history of supernatural religion has been a tremendous factor in the history of edifying metaphysics, studies like this one ought not to escape the notice of "philosophers." Those races that have had a history emerged, presumably, from the stage of these peoples without history, and our theories about "reality," our devout epistemology and even, sometimes, our theories of logic are lyric with the call of the "mentalité primitive."

We do not, as a rule, speak of the "faith" of primitive folk in their gods, their magic, and their dead; the word faith is likely to be used for belief in the face of difficulties that might be acknowledged. This conscious "belief," existing perhaps as an orthodoxy side by side with disbelief, is, though M. Delacroix does not say so, an attenuation of the entirely naïve supernaturalism of the more nearly primitive collective imagination, and that curious and unwavering orthodoxy supplies perfect examples of *la foi*. M. Delacroix writes, however, of faith as it is documented in the con-

text of more or less awakened and professional criticism. *La Religion et la Foi* is a work of great erudition, and more than one reader may feel himself almost continually in the atmosphere of definitions, apologetics and of learned controversy. All of it is intended, however, to illustrate stages and qualities of faith. "For faith is the primary religious fact for the psychology that studies the religion of religious souls. Every religion announces that by faith we reach realities independent of the individual; but every religion admits also that by faith we establish contact with these realities.

"We propose to try to describe the elementary forms of faith, by which I mean the distinct and ultimate attitudes which this complex term denotes. Psychological analysis shows that there are different ways of believing; we can distinguish rational belief inclining to scientific certainty; emotional belief, based on needs and attitudes, and conferring a singular value upon its objects; faith resting on authority and hearsay and based on the power of opinion or of institutions. These three general forms of faith present themselves and this classification imposes itself, though only as a schema" (p. ix). Faith in its primitive form is *la foi implicite*, really "the faith of authority, the power of the religious environment, the pressure of society upon the individual" (p. 1). Naïve faith shared by all or nearly all leads to cult, and faith institutionalized demands dogma and creates it, something which when made self-consistent becomes a system of theology. With dogma comes the distinction between truth and error with the resulting appeal to criticism, leading to *la foi raisonnée*. Its great age was the "middle age"—but criticism was always faith, and made from the inside, not from the outside. Formality and authority of dogmatism leads to a romantic reaction in the forms of *foi confiance*, vague and sentimental but free and individualistic, faith in what eludes definition. When this becomes *aigu* there is *certitude mystique*.

There follows prophetic inspiration, fanaticism, conversion, outside the faith and *la foi créatrice*. Religions are collective things, and group excitement and effervescence contribute to the formation of religions. But behind society in effervescence is society itself. But there must be also an imaginative conception of "the world," something not recognized as a dream but accepted as having objective validity. Here are what M. Delacroix calls three principles, the product of which is the power which excels (*dépasse*) both in subjectivity and objectivity (p. 423). "For civilized men, nature is not divine. It is greater than we are, but we are also greater than it. . . . But nature becomes sacred again when

the esthetic vision frees it from this limitation." Faith, an energy of the "spirit" generates its objects and the dogmas about them, and these, of course, react on the faith that wrought them.

It is not an easy book to read and it is less easy to give an account of it. The reader gets certainly a sense of the great complexity of the subject when presented in the setting of its own literature. The bibliography is very interesting.

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NOTES AND NEWS

We quote the following from an article on "Art and Science" printed in the Literary Supplement of *The London Times*, November 2, 1922.

"So it is also with the biological-psychological method. That has value only when employed in a negative way, to explain failure in art and error in æsthetic experience, not art itself nor true æsthetic experience. At present it is often employed so perversely, and with results so monstrous, as to provoke a general impatience of all psychology; but this perversity comes of an arrogant ignorance of the first principles of æsthetic. If they can be grasped by the psychologist, his science may remove obstructions to the experience and even to the production of works of art.

So long as he tells us that all art is an unconscious expression of the sexual instinct, he tells us nothing that is of any value to us. He asserts merely that something is happening in a dark, unknown region, the result of which, when it reaches the light, is a work of art. But, as everything else which reaches the light is also, according to him, a result of the same cause working in darkness, we are left with a general and unconvincing statement about everything. Yet this statement, if it were confined to certain kinds of failure in art, might help us to understand them. For it is probable that failures in art have causes in the unconscious; and psychology may in time be able to discover these causes and the connection between them and their effects with precision. Thus, the unconscious working of the sexual instinct may be the cause of many failures in art—for instance, of the forbidding sentimentality of some religious pictures. This revolts instead of charming us, because we are aware of something in the picture other than what the artist himself consciously intends. The furtive appetite which peeps through this mask of devotion is trying to infect us by false pretences; and so, unless we wish to share the appetite, we refuse to be moved by the devotion and are troubled and disgusted by a lack of unanimity in the artist's mind. It is as if he were not quite sane, as if something said under the influence of that religious drug betrayed not a self, but an instinct destroying the unity of the self. Behind all this show of the artist and the devotee there is a monkey, and a sentimental monkey is something

not to be endured. But there may be a sentimental monkey lurking in us, too; in which case we shall like to be deceived by the show of devotion. While our appetites are furtively tickled, we, too, shall believe that we are experiencing a religious emotion. Hence the long popularity of that Magdalen of Titian's who, as Ruskin said, looks as if she hoped to get to heaven by dint of her personal charms.

But there is all the difference in the world between this ambiguous concealment, or betrayal, of appetite and those great and simple works of art which are openly concerned with sex. Sex, for instance, is the theme of Coreggio's Antiope, not its secret preoccupation. We see nothing in that picture other than what the painter consciously intends. He was unanimous when he conceived and executed it, and we are unanimous and untroubled in our experience of it. Further, in this case, and in all great works of art where sex is the theme, it seems to be only a way into that state of being which all great art, no matter what its theme, creates. In a moment we are beyond the subject, beyond all those frank allurements of beautiful flesh, in the paradise of which Coreggio was really dreaming. It is like love music in which the passion is freed from its object and the love lost in the beauty of the music. By this power of escape all great art may be known, and, so far from being an unconscious expression of sex, it consciously uses sex, like all other human passions and concrete things, as a way into the Holy of Holies."

THE JOURNAL OF PHILOSOPHY

THE EMERGENT THEORY OF MIND

MY purpose in this article is to discuss the bearing of the new theories of mind upon the old and tantalizing mind-body problem. Recent writers do not seem to appreciate how the problem has been shifted, nor how completely the old classical solutions have been superseded. I think that in the future we shall not continue to hear much about interactionism, parallelism, epiphenomenalism, double-aspectism, *etc.*, except as interesting historical theories. It remains, however, to inquire much more carefully and thoroughly than I can in this brief paper, whether the emergent theory will be adequate to cover the facts.

It is my belief that more progress has been made in the past fifteen years in coming to an understanding of the real nature of mind than in all the centuries since Aristotle. We are, indeed, coming back somewhat to his view, which was that the mind is the use, perfection, entelechy of the body. We are accustomed to hear about the points of difference between the Neo-Realists, the Pragmatists, the Freudians, and the Behaviorists, but the points of agreement are more significant. These schools pretty well agree in regarding mind as adaptive behavior, as specific response, as selective control; more exactly, as that integration of vital processes which enables an organism to respond as a unit to a new situation in such a way as to conserve and enhance its well-being. Perhaps the Freudians and some of the Pragmatists will hardly accept this definition without qualification, the qualification being that the mind is this and something more—something *sui generis*, something new and distinctive, something unique and creative. With this qualification I should heartily agree, if it is interpreted pluralistically and not dualistically. If, however, we accept this definition of mind as a working basis, with or without the above qualification, it is interesting to see how it transforms and illumines the old and vexatious mind-body problem, which in times past has come so near driving some of us crazy.

In defining the mind as that organization of vital processes which makes adaptive behavior possible, it is mind that I am speaking of and not consciousness. Endless confusion and misunderstanding would have been avoided, if psychologists and philosophers had

steadfastly used the word "mind" to denote this kind of behavior, this sum of capacities, and not the word "consciousness." It was most unfortunate that in the last decades of the last century, when suspicion began to attach to the words "soul" and "mind," psychologists fixed upon the word "consciousness" to stand for the psychical life in general. James tried to put a stop to this in his celebrated essay but he did not seem to understand clearly the relation between consciousness and mind. In recent years this relation is becoming clear.¹ I shall refer presently to consciousness in its relation to the body, but at present I am speaking not of consciousness but of mind.

It is, therefore, with a decided feeling of relief or even of emancipation that we discover that the new conception of mind sets us free from all the old so-called "solutions" of the mind-body problem, from interactionism, from parallelism, from epiphenomenalism, from the double-aspect theory, from subjectivism, and from materialism. I believe these "isms" have been superseded. So also probably has the expression theory, the transmission theory, and the instrument theory. The brain is not the instrument of the mind. Rather the brain is the instrument by means of which nature achieves the mind. Mind and body do not interact, as interactionism and dualism teach. The mind is not a form of the mechanical interplay of atoms, as materialism teaches. The body is not a phenomenon or appearance or externalization of mind, as idealism teaches. Mind and body are not parallel as psychophysical parallelism teaches. Neither are they two sides or aspects of the same reality, as the double-aspect theory teaches. You can not represent the relation of mind and body by any system of parallel lines, whether merely parallel, interconnected, or correlated with a third line, nor by two lines one of which is the shadow of the other. Mind is something which the body achieves, or which nature achieves by means of the body. If you must have a diagram, the ladder will be better than the parallel bars. When nature achieves the molecule, the atom ceases to be the thing of primary importance, worth, or even of reality. When nature achieves the cell, the molecule is eclipsed. When the organism is achieved, the cell is eclipsed. When mind is achieved, the body is eclipsed. Mind is a new reality, gained, achieved, won. It is, in Aristotelian phrase, the form of the body.

¹ Witness the rather strong language used by Bertrand Russell in his book, *The Analysis of Mind*, p. 40. "It is therefore natural to suppose that, whatever may be the correct definition of 'consciousness,' 'consciousness' is not the essence of life or mind. In the following lectures, accordingly, this term will disappear until we have dealt with words, when it will reëmerge as mainly a trivial and unimportant outcome of linguistic habits."

Evidently, if we want a name for this new notion of the relation of mind to body, we may call it the emergent theory.² Mind emerges from the body. The theory of levels has taken the place of parallelism, interactionism, and the double-aspect view. It is hard to say which of these theories was the most unsatisfactory and the escape from them is wholesome. All the dualistic theories were unconvincing. There is no magic about the number two. Nature having achieved two, goes on to three and four. The monistic theories were little better, although, if mind be the supreme reality, there is a sense of the word "reality," which admits of a monistic interpretation, a monism of value perhaps. But the pluralistic view of reality is most satisfactory. Mind is real, consciousness is real, body is real, and so are many other things.

But, some reader will say, the mind-body problem can not be disposed of so easily—in this high-handed manner. Mental processes seem to be correlated with bodily processes. With every mental image, perception, *etc.*, some neural process is correlated. Well, from our point of view, they are not correlated and there is no duality about it, nor are they two sides or aspects of the same reality. What happens is that we have a series of vital processes, which, when integrated or organized, exhibit capacities that we call mental or psychical. When they reach the point of attaining to that kind of activity which we call intelligent control, we no longer speak of them as vital or neural processes, but as psychical. We are up on a new level, among new realities, in a new atmosphere, dealing with new things, having their own laws and peculiarities. Mind has emerged from matter. The spiritual has emerged from the physical. After long centuries of misuse the word spirit gains a definite and profitable meaning. It means the level of the psychical as viewed from the standpoint of value.

Thus far, I think, the way is clear and the emergent theory seems to satisfy the conditions. But we are not through with our troubles. The mind-body problem is more difficult than this. There are still two "waves" to be met and, if possible, surmounted. We can not evade the fact of consciousness and consciousness is not the same thing as mind. Behaviorism, as a new method of advancing the science of psychology, is a wholesome discipline, but the psychologist can not ignore the reality known as consciousness,—at any rate the student of philosophy can not. Whatever modern theory of consciousness we adopt, the "cross-section" theory, the "relational" theory, the "independent variable" theory, the "new

² S. Alexander, who has made the emergent theory familiar to us, says that Lloyd Morgan and George Henry Lewes had previously used the term. Compare his *Space, Time and Deity*, Vol. II, p. 14.

dimension of reality" theory, the "something adventitious to psychic states" theory, the psychologist has consciousness on his hands, if not in his head, and willy-nilly must do something with it.

I have, of course, no intention of discussing the problem of consciousness here. I am only raising the question whether the emergent theory can be made to cover it, whether it is simply intelligent behavior that emerges from the neural level, or whether consciousness may emerge. If not, then is consciousness something which is parallel with the neural processes, or is it another aspect of the neural processes, or does it interact with them? I am tired of these words and do not believe that any of them apply to the case in hand, although there are greater difficulties here than in the case of mind, as I have been discussing it. Let us say that consciousness is simply the relationship between the mind as perceiving and the thing perceived. The percipient mind is acted upon and responds to the thing or object, and this sort of togetherness is what we mean by consciousness in its simplest form. Awareness is another word for the same thing in the simple form of it here described. The mind-body problem simply does not enter into the matter at all. We are dealing with a relationship between the mind as a real thing and the object as another real thing, but the first term in this relationship, namely, the mind, has emerged from the body; for, when the brain has attained to that degree of integration in which behavior of this kind takes place, that is, adaptive, selective behavior, we no longer call it neural or bodily, but psychical. If, however, anyone should prefer to speak of the organism or the brain as acting in this way, that is, if anyone wishes to consider the brain as the percipient subject, why then, consciousness as before would be the relationship between the percipient organism and the object perceived. In either case consciousness, as a special kind of relation, is something real, something wholly immaterial, something other than and much narrower than the mind, and something related to the body quite otherwise than indicated by any of the old terms, parallelism, interactionism, double-aspect, *etc.*

But the word consciousness, as it is used in everyday speech, usually means something more than mere awareness. It approaches the meaning of self-consciousness. It implies not merely a relation between the percipient subject and the perceived thing, but a relation between the present and the past history of the subject. It implies that the whole situation takes the form of a connected story. But so far as the bearing upon the mind-body problem is concerned, this new richness of the word "consciousness" makes no difference. The relationship which I have explained above still

prevails. Only it is important to remember what different meanings the word "consciousness" actually has, and in its two legitimate meanings to keep it distinguished from the larger term, mind.

Those of us who have had the experience of awaking from the unconsciousness of ether or some other anæsthetic have perhaps had a good illustration of the two kinds of consciousness to which I have referred. There is first a mere awareness of certain noises, perhaps of the nurses' voices, not brought into relation to "myself," or to the total situation. Consciousness thus far is simply the relation between a percipient subject and an object. Gradually, however, the situation dawns. I am here and have been asleep. The voices, myself, the environment, my immediate past, are knit together into a connected story. I have regained my consciousness. The perceived object has been brought into relation, not only with the percipient subject, but with a lot of other things, names and memories. The perceived thing gets a *meaning*, as we say, that is, it takes its place in a familiar group of memory images, making a connected story.³ We have here merely a more complex form of togetherness, but so far as the nature of consciousness itself is concerned or its connection with the body our conclusions are not changed. What I have said of awareness applies also here.

If now anyone should not be satisfied with this very simple description of consciousness and its relation to the body and should insist that we have in consciousness something more than such a "compresence" as I have described, such for instance as recent writers have called "a new dimension of reality" or "an independent variable," I can not see that it would make any difference so far as my conclusions about the relation of mind and body are concerned. If, however, one begins to speak about consciousness as a creative agent, or an effective factor in the world, why, then one is speaking not of consciousness but of mind. The emergent theory would then hold good.

My only present purpose is to show that in dealing with the mind-body problem consciousness must be considered as just one distinct phase of that total complex thing which we call the mind and dealt with by itself in its relation to the body, and that if the connected story theory of consciousness is correct, it is just a peculiar kind of relation between things and hence comes neither under the emergent theory nor any of the old parallelistic, interaction, or double-aspect theories.

This is the second "wave." A third, if one were to solve the mind-body problem, would have to be met and surmounted.

³ Comp. the full theory of consciousness given by Bertrand Russell in his *Analysis of Mind*, already referred to, p. 288ff.

If by mind we mean adaptive behavior, intelligent control, specific response *plus* consciousness, then the above-described solution of the mind-body problem may suffice. But mind is a still broader term. It includes the primary biological "interests," which belong to the living organism itself. Now while there is a strong tendency in present-day psychology, sociology, education, *etc.*, to elevate to a position of first importance the conative tendencies, instinctive cravings, non-reflexional elements of experience, the wish, the will, the libido, the power of self-maintenance which belongs to all life, the vital principle, *élan vital*, or whatever it is, nevertheless, in recent discussions about the real nature of mind and consciousness, which have filled this JOURNAL and others, these primary biological impulses have not been sufficiently noticed. Professor Perry, near the conclusion of his chapter on "A Realistic Theory of Mind" in his *Present Philosophical Tendencies*, recognizing the complex character of the mind, says that it embraces three parts. First, a complex acting desideratively or interestedly, characterized by certain biological interests. Second, a nervous system acting as instrument of the above interests. Third, certain contents or parts of the environment, called the mental contents.

It is not the place here to ask why Professor Perry did not add consciousness to these three parts, making four, nor to raise the question whether the analysis would not have been more accurate if he had substituted consciousness as the third and last element in mind in place of the problematical "contents," as I should be inclined to do, thus limiting the mind to a series of interests and activities plus consciousness. This question does not belong here. I am only concerned in calling attention to the fact that the primary biological interests belong to that very complex thing which we call the mind and in asking how this additional factor would bear upon the mind-body problem.

It begins to appear more than ever that the mind-body problem is a kind of pseudo-problem and the traditional "solutions" all quite beside the mark. The relation between the mind and the body may be quite different depending upon whether we are talking about the springs of behavior, namely, the primary biological interests, or about adaptive behavior itself, or about consciousness. Evidently man's original nature, his primitive impulses, his primary biological interests, do not "emerge" from the organization of his vital processes. They *are* the vital processes or a part of them. The fact is, of course, that we are not in position to discuss this problem at all, because we do not know enough about vital processes, the springs of life, to determine their relation to the body. We at once divide into schools. According to M. Bergson, not only does the vital im-

pulse not emerge from the body but the exact reverse is thought to be true. Matter is a kind of emergent from the vital impulse. On the other hand, according to the extreme Behaviorists and the Materialists, life itself and of course all its impulses and interests are the products of material organization. In this sense, I suppose, the primary impulses could be said to emerge from matter, although not from the body; for the body, at any rate the brain, is a kind of instrument of these primary impulses, a means of controlling the environment to their ends. If so, then it would seem that the primary biological interests emerge from matter, and the brain (and hence the mind) emerges from the primary biological interests. At any rate the emergent theory seems to fit in here also better than any of the old parallelistic, interaction, or double-aspect theories.

Mr. Louis Berman, in his book *The Glands Regulating Personality*, speaks of the lowest organs, the vegetative organs, the heart and lungs, stomach and intestines, the kidneys and the liver, and the glands of internal secretion as inventing and elaborating muscle, bone, and brain to carry out their will. Evolution, he says, has been in the direction of a greater perfection of methods of carrying out their will. "Mind, reacting upon its creator, has, in a sense, come to dominate them, because it has become the meeting ground of all the energy-influences seething and bubbling in the organism, and so developed into the organ of handling them as a whole, their Integrating-Executive."⁴

Here we seem to have an answer to the question which American Instrumentalism never made clear. Instrumentalism tells us what the mind is the instrument *for*, but not very confidently what it is the instrument *of*. According to Professor Berman, it is the instrument of the vegetative organs, heart, lungs, *etc.*, for carrying out their will, or the instrument of the "energy-influences seething and bubbling in the organism."⁵

⁴ Page 196.

⁵ To my mind Professor Berman spoils this excellent description by pre-facing it with his theory that consciousness or awareness must be accepted as a fundamental, primal fact, like protoplasm. "Consciousness and protoplasm may be the complementary sides of the same coin." In a somewhat similar way, Dr. Alexander, in his *Space, Time, and Deity*, seems to me to relapse into a kind of double-aspect theory after having given the clearest possible account of the emergent theory. He reiterates throughout his book his excellent theory that the mind emerges from a lower level of complexity which we call vital, but still finds it necessary to teach that "the mental process and the neural process are one and the same existence, not two existences. As mental, it is in my language enjoyed by the experient; as neural it is contemplated by an outsider or may be contemplated in thought by the experient himself." (Vol. II, p. 9.) Similarly Professor Montague, after identifying consciousness with potential energy, existing in space, says that "what we know directly from within as the

Returning, however, to our main inquiry, we are not told by Professor Berman how the energy-influences are related to the body. In other words, nobody knows anything about the "energy-influences," "conative tendencies," "biological interests," "self-maintenance of system C," "*élan vital*," or whatever we choose to call it or them, so it is useless to discuss this part of the mind-body problem. Although I should prefer the vitalistic method of approach here, probably most of the readers of this JOURNAL would rather think of the primary biological interests as the result of the organization of simpler material elements. In the latter case the emergent theory fits in better than any of the older views. Incidentally I may call attention to the fact that, if one assumes that the biological interests emerge from the organization of material atoms, this apparently behavioristic or materialistic solution of the question does not lead in the direction of an ontological materialistic monism or any kind of monism, first, because, since so much is made of the result of *organization* and *integration*, the organizing or integrating agency is still to be accounted for; second, because no one knows what the first elements are with which the organization begins, electrons being simply our present stopping place; and third, because the whole view is pluralistic. What we have is a hierarchy of entities increasing in "value" with each new integration of the next lower processes. But in these philosophical problems I am not for the moment interested.

Summarizing, I believe it is helpful to keep in view that the word "mind" (in its wider meaning) includes three things: first, the primary biological interests: second, adaptive behavior (mind in its narrower meaning): third, consciousness. The classical solutions of the mind-body problem, parallelism, interactionism, double-aspect theory, epiphenomenalism, *etc.*, do not apply to any of these, although we know little about the first. The emergent theory seems better all around.

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TWO NOTES ON ESTHETICS

THE discussion of esthetics in Vol. XIX, No. 5 of this JOURNAL raised two points which seem to invite further consideration. One is Mr. Pepper's "common-sense concept" for a working unit psychical or subjective side of experience may be the same as what we know indirectly from without as the potential energy of the nerve currents in the brain." (*Monist*, Vol. XVIII, p. 27.) I am myself unable to see why either the emergent theory of Dr. Alexander or the energy theory of Professor Montague needs to be supplemented by introducing any double-aspect view.

in esthetics; the other is the relation of beauty to utility, in part as related to that concept.

I

Mr. Pepper's concept is first defined as "the *liking of a thing for itself* in contrast to the valuing of a thing as a means to something else," and a little further on as "things valued for themselves independent of all practical considerations." I am not sure that these two statements are wholly consistent; but that we can better decide later. The first element, the "liking of a thing for itself," corresponds pretty closely to the criterion of beauty in St. Thomas Aquinas: *Id cuius ipsa apprehensio placet*, already brought forward as a working conception in Mr. Carritt's *Theory of Beauty*, p. 9. It may be helpful to examine this phrase in its context, and in the light of some other passages in Aquinas, with a view to seeing their implications.

The phrase occurs in a discussion of the statement that "not only the good but also the beautiful is loved by every one," which runs as follows: "The beautiful is the same as the good, differing only in the way we conceive it (*ratione*). Since the good is that which all desire, it is of the nature of the good that in it desire finds rest. But it pertains to the nature of the beautiful that at the sight or knowledge of it perception (*apprehensio*) finds rest. Hence those senses especially consider beauty which are in closest touch with knowledge (*maxime cognoscitivi*), that is, sight and hearing, which serve the reason; for we speak of beautiful sights and beautiful sounds. But in reference to the objects of the other senses we do not use the name of beauty; for we do not speak of beautiful tastes or smells. Hence it is clear that the beautiful adds to the good a certain order with reference to the power of knowledge; so that we may call 'good' that which simply satisfies desire, and 'beautiful' that of which the very perception is pleasing" (*Summa*, 1a, 2ae, q. 27, art. 1; II, p. 224¹). In another place the requisites of beauty are stated to be three: "First, wholeness or perfection; for things which are diminished are by that very fact ugly; second, due proportion, or consonance; and lastly, clarity; for which reason things which have a bright color are said to be beautiful" (*Summa*, 1a, 2ae, q. 39, art. 8). But the idea of proportion, as Aquinas was well aware, introduces an element of relation: "It must be said that beauty, health, and the like are spoken of with reference to something; for a certain tempering of the humors makes health in a youth as it does not in an old man; and there is a certain health in a lion which is death to a man. Hence health is a proportion of the

¹ References to volume and page are to the edition of Frette and Mare.

humors with reference to a certain nature. And so beauty consists in a proportion of members and colors'' (*Comm. on Psalm XLIV; XVIII*, p. 504). Here Aquinas (like Bacon in his essay on beauty) is thinking mainly of personal human beauty; yet the remarks of both have an obvious extension to other ranges.

Thus we find in the context of our formula a good many qualifications. Beauty may involve an element of knowledge, as well as of purely emotional reaction; it may be apprehended under changing conditions, and these changes may alter our apprehension of it. In view of these considerations, can the formula carry us very far without being interpreted, and can it be interpreted without differences of opinion? Is the reliable perception of beauty that which we gain at first sight, or that which we arrive at only gradually? Or is the pleasure to be only that which we feel at the first moment? I take it that cases in which the beauty of something is by no means, or only very imperfectly, perceived at first sight are familiar enough to us all. And again, is every one's first perception of and pleasure in beauty of equal value? If so, we must probably reduce esthetic perceptions to the very simplest cases; if not, the door to divergence of opinion swings wide open again. "If these men would let the trimmings go," says Mr. Pepper, "they could coöperate and work in harmony." They could, perhaps, but would they? And they might not even agree with Mr. Pepper as to the real nature of "trimmings."

Meanwhile, it may be profitable to push our inquiry into Aquinas a little farther. It is clear that he recognizes a connection between the beautiful and the good, and the presence of an intellectual element in the former. Here is another passage bearing on the first point: "The beautiful and the good are indeed the same thing at bottom (*in subjecto*), because they are founded on the same thing, to wit, form, and on this account the good is praised as beautiful; but they differ in the way we think of them (*ratione*). The good properly has reference to desire; for the good is that which all things desire, and so it has the nature of an end; for desire is a certain motion toward a thing. But the beautiful has reference to the power of cognition, for those things are called beautiful which when seen are pleasing. Hence the beautiful consists in due proportion, because the senses are pleased by things that are duly proportioned, as by those that are like themselves; for sense is a certain *ratio*, and so is every power of cognition. And since cognition is effected by assimilation, and likeness has reference to form, the beautiful properly pertains to the nature of a formal cause'' (*Summa*, 1a, 1ae, q. 5, art. 4; I, p. 38). Not only so, but the de-

sires for the beautiful and for the good are not really separate: "It must be said that the ending of desire in the good and the beautiful and peace is not an ending in different things. For by the very fact that anything desires the good, it desires at the same time the beautiful and peace; the beautiful, in so far as it is in itself modified and specified,² which is included in the nature of the good; but the good adds an order of perfecting to other things. Peace, again, imports the removal of perturbations and the gaining of what is sought. But the very fact of desiring means the desire to remove what stands in the way of it. Hence by the same desire we desire the good, the beautiful, and peace" (*De Veritate*, q. 22, art. 1; XV, p. 144).

So much, then, for the connection and the difference between goodness and beauty, as Aquinas conceived them; and if we discount the scholastic terminology, we shall find in his account (which is, of course, entirely incidental to his larger purpose) a good deal with which we may agree. For myself, I do not feel that beauty can be restricted to the emotional, but rather that an intellectual element is, or may be, present in it. The requisite of "wholeness or perfection" has perhaps some relation to Croce's contention that there are degrees of ugliness but not of beauty, and shows how that contention should be interpreted. The idea of beauty as in part arising from the relation to an observer or recipient is one which a sound esthetic can hardly leave out of account. Finally, in the correlation of beauty, goodness, and peace there is a reference to that feature of the esthetic experience which a too little known poet has called "the strange quietude of human art." These are points noted in passing; I am not trying to coördinate them, much less to work them into a systematic presentation.

What now are we to understand by Mr. Pepper's values "independent of all practical considerations"? Do they mean instrumental values in general, or are they to be more narrowly interpreted, in the sense of the strictly utilitarian? If the former, it can hardly be maintained that instrumental values can have no place in the esthetic experience; if the latter, we are led directly to the second point which I wish to discuss.

II

The good old notion that utility is a self-evident concept, the applications of which are immediately clear, was a great labor-saver. Apply it to a given experience, note the elements it ex-

² "For the beautiful adds, over and above a good order with reference to the power of knowing, that the fact should be of a certain kind" (*Comm. on Dionysius*, c. IV, lect. 5; xxix, p. 443).

plains, and set down the remainder to such minor considerations as the esthetic. Nothing could in appearance be simpler, even if the result might be such cheerful flippancy as William James's coupling of psychiatry as the study of the harmful in mental life with esthetics as the study of the useless. Unfortunately, the notion of utility is both complex and highly relative; and we can not see either its various degrees or its applications to art without careful scrutiny.

In ordinary life, the criterion of utility is *specific application*; a thing is seen to be useful just in so far as it immediately meets a specific need. But the more specialized it becomes, the less adapted it is to any but its own special situation. A saw is useful only for a particular operation, and a keyhole saw only for a particular kind of sawing; and either is of "use" only when both desire and opportunity for sawing are present. But we should think it palpably absurd to call a good tool "useless" when it is merely unemployed, that is, in the absence of the situation to which it is adapted. Now the case is not radically altered when we turn to spiritual processes and capacities. It is true that the latter are not, and can not be, so directly fitted to immediate situations as are material tools; and there is, further, a greater need of specific response by the other factor in the situation. But the element of response is not wholly lacking even in the case of tools; it requires a certain type of saw to cut metal, or to cut wood to the best advantage, and a screwdriver is not very effective on an uncut screw-head. Thus it does not seem that there is a radical difference between the two groups of cases, but rather a difference of emphasis in common elements.

Looking now more carefully at the applications of utility, we can for convenience distinguish four major forms. First, there is that which has *immediate special* application, like a title-deed, which refers to a specific actual "here and now," and has no explicit reference to anything else. Secondly, there is that which has *mediate special* application, like a statute, which prescribes how a specific situation is to be dealt with *if* it occurs, but does not specify when or where it will occur, or even that it will necessarily occur at all. Thirdly, there is that which has *immediate general* application, like the multiplication table, adaptable to an indefinite number of situations, which must occur in *some* experience; but the kind and manner of the experience are not specified, beyond the presupposition of ability to figure correctly. And fourthly, there is that which has *mediate general* application, depending on adaptation to a specific response, which must be furnished in and by an individual experi-

ence. To this class belong, among others, religious rituals and works of art. To say that the response to the appeal of a work of art is "useless" because it does not lead to a concrete action seems to me misleading. Sometimes it does issue in action; often it may lead to a beneficial heightening of the perception of the meaning of experience. Nor is concrete action always, in the broader sense, "useful." The tendency of an individual to self-preservation need not be wholly useful even to him, and certainly need not be so to others; and the need of self-expression in an art may be so imperative that the satisfaction of it will be as useful to its possessor, in the sense of maintaining the equilibrium of his personality, as the satisfaction of any other personal need.

Obviously, as we go through the sequence of utilities thus roughly distinguished, the place of "utility" in the narrow sense of immediate and specific application grows smaller, and the place of other values, including the esthetic, grows larger. It is now important to notice that below the level of the simple utility is another level, that of the extemporized solution—the makeshift. This we may tolerate, as the best way out of gravely hampering conditions; but we do not admire it for itself, and as a constant reliance it betrays its user. The habitual use of makeshifts turns into shiftlessness. Just so, an action which, even skilfully, evades a real moral issue leaves us guarded or squeamish in our admiration, and certainly causes us no glow of satisfaction.

Let us say, then, that immediately recognized specific utility is the zero point on a scale of values. Below it is the region of makeshifts and patchwork; just above it is the region of devices which with some measure of skill meet a real need, or even any presented situation. Now, just as below the zero point any satisfaction which we feel is either misplaced or apologetic, so at the zero point we feel no distinguishable satisfaction, because both situation and solution pass immediately and without analysis into the general current of experience. But as we go up the scale, satisfaction rises into consciousness as a distinct element, and tends to be deepened and diversified. In watching any sort of "good job" we feel a pleasure which is not explained by any practical relation in which we stand to it—but which is not always impaired by such a relation, for we may feel the same sort of pleasure in connection with an activity of our own. What first makes this reaction possible is the fact that we can find leisure to stand off a little from the experience, and so appraise in it other values than the purely practical. Then, the higher in the scale we go, the wider is the circle of possible adaptations, the less crudely material the aim, so that the attitude of

purely esthetic contemplation grows correspondingly easier. But if we cut loose entirely from the original basis of the experience, or if we try to assume an attitude of detachment without anything from which to be detached, the desired esthetic reaction will be either falsified or demolished.

This conception of a scale of values in which utility and beauty are gradually distinguished, and the latter made more prominent than the former, enables us to see just where the fallacy of "independence of practical considerations" takes its rise. It is easy to argue that because the element grows less and less marked, a point may be reached at which it will vanish entirely, and a "pure" esthetic value remain; and such a view has often been held. I quote, for instance, the words of a writer noted for cautiousness of statement, who also has a sound view of the general nature of the esthetic experience: "All Fine Art, then, we may say, is founded originally in satisfied utility, and in some cases continues dependent on it to the last. It is conditioned by the utility out of which it arises, and with which it is contrasted. And thus, when we look at the Fine Arts in their full development, a distinction is plainly to be drawn between those which continue throughout to be conditioned upon the prior satisfaction of some specific non-artistic utility, and those which are cut loose from such specific dependence, and have a free self-centered existence of their own."³ The doctrine of the first two sentences is absolutely sound; but that of the third introduces the fallacy. The practical consideration may be indefinitely attenuated, but it is never wholly lost; we no more encounter disembodied arts than we encounter disembodied human beings in ordinary life. Even in an observer the question of esthetic response can not be wholly divorced from considerations which may broadly be termed "practical"; still less so can it be if we consider the activity of the artist. The qualities of pigments or the nature of a plastered wall are of practical concern to the painter, the ranges and timbres of musical instruments to a composer, the associations of words to a poet, and so on indefinitely; and these form but a single range of such considerations. I doubt if a serious artist often sets to work in entire disregard of them; and it is certainly the case that artists who profess a lordly disdain of them generally come to grief.

I conclude, then, that Mr. Pepper's concept is at best a sign-post, which can only direct us toward a theory of valuation to be worked out on its own merits, with as much conflict of opinions as may be necessary. We may grant that "things valued for themselves"

³ Shadworth Hodgson, *The Metaphysic of Experience*, III, p. 435.

exist, though I think we can do so only after careful definition; but even if we do, we may still hold that such values need not be self-evident, and ask under what conditions they are to be recognized. As for "independence of all practical considerations," that is a phrase too vague to be helpful unless interpreted; and if it be interpreted as making the esthetic attitude the polar antithesis of the practical, it seems to be setting up an unnecessary and untenable dualism. For my part, I believe that a better point of departure would be the conception of beauty not as something *aimed at by* an experience, but as something which *comes to be recognized in* an experience. If this is what Aquinas meant by calling it a formal, not a final, cause, he was profoundly right.

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BOOK REVIEWS

Foundations of Formal Logic. H. BRADFORD SMITH. University of Pennsylvania Press, 1922. 56 pp.

In this pamphlet, which is intended for use in the classroom, Mr. Smith treats some of the problems of logic from a very special angle, so that we can not leave the work without the question—are these the foundations of logic? Modern mathematical logic has so broadened the Aristotelian and Mediæval conceptions of the subject that we anticipate much more than a treatment of the syllogism in a paper which has the mathematical form; and yet Mr. Smith restricts himself to the syllogism, its moods and figures, with a few paragraphs on immediate inference. The exposition makes use of a quasi-mathematical symbolism which involves many of the ideas of more familiar logical calculuses, but the total impression is one of clumsiness and inelegance. Though the avowed purpose of such a symbolism is to add clarity, Mr. Smith's symbols confuse rather than illuminate: his system lacks the simplicity and completeness which we have been led to expect from mathematical logic.

We are able, however, to extract the following points from the paper: (1) Mr. Smith believes that the subject-matter of logic is a certain number of propositions about classes. "The problem of a deductive science," he tells us, "is to define its elements . . . by an enumeration of their formal properties. The task of logic is, then, to develop its own system by constructing all the true and all the untrue propositions into which its elements enter exclusively." These elements are, for Mr. Smith, classes. This is a debatable point since we have learned from Peano and Russell, from Couturat and

others, that logic need not confine itself to classes and class relationships, that among its elements are to be found propositional functions, propositions, concepts, relations, operations—entities in terms of which classes can be defined but which are not classes. This is one reason why Mr. Smith's book is misnamed: a study of the fundamentals of logic should include more than propositions (or propositional functions) about classes. A class calculus of any sort is not the whole of logic; it is merely one aspect of a subject which refuses to be confined within the narrow walls of definitions.

(2) The class calculus which Mr. Smith constructs—by the aid of Euler's circular diagrams—differs from other class calculuses in that its aim is to represent the varieties of the Aristotelian syllogism. He selects four basic types of proposition (about classes), which are roughly equivalent to the *A*, *I*, and *E* of traditional logic and which embody all of the possible relations between two classes. The syllogism is then described as a form of implication which determines the relation between classes *c* and *a* when any of these relations holds between *a* and *b*, and between *b* and *c* respectively. (By the untruths of logic, Mr. Smith means all of the possible ways of going astray in the syllogism, *i.e.*, all of the possible formal fallacies.) It is not surprising that this class calculus, despite its symbolic form, conveys no new information about the syllogism: there is probably no new information to be had; and the theory of the mediæval logicians, apart from the form of its expression, is as acceptable today as it was in the twelfth century. Logic has opened new avenues of speculation only by escaping the syllogism and by giving to it a subordinate, though necessary place, in wider systems.

(3) The discovery that there is a non-Aristotelian logic comes as a paradox in the seventh and eighth chapters of Mr. Smith's book. The author's postulates for the syllogism are susceptible of two interpretations in terms of classes; one of these involves the null and universal classes while the other does not involve these classes. We are told that the former, though further from ordinary intuition, is the more sufficient, and this is the non-Aristotelian logic. It is non-Aristotelian not because it deserts the syllogism, but because it interprets the *A*, *E*, *I*, and *O* propositions of Aristotle in a non-Aristotelian way—*i.e.*, through the null and universal classes. This suggests to us a still better reason for speaking of Mr. Smith's system as non-Aristotelian; a reason which would apply equally well to the interpretation which, by inference, he asserts to be Aristotelian. Aristotle did not believe that logic deals with classes but with subjects and predicates, the subjects being individuals, or first substances, and the predicates universals. Aristotelian logic is a sub-

ject-predicate logic, and subjects and predicates need not be classes. This is the burden of such writers as Mr. Bosanquet, who show that Aristotle is concerned with universals or concepts—with genera, species, definitions, propria—and not with classes.

It is apparent from what has been said that the *Foundations of Formal Logic* takes us only a short distance into the subject and over controversial ground. Its chief merit will be to give to the student a thorough understanding of the syllogism in a form which is superficially different from that of the usual text-book. However, the value of such quasi-mathematical expositions of the syllogism, if they do not embody new ideas, is questionable, and a teacher of conservative temper might prefer the less complex and more lucid methods of the older logic.

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The Aesthetic Attitude. HERBERT SIDNEY LANGFELD. New York: Harcourt, Brace and Howe. 1920. Pp. xi + 287.

In his preface, Professor Langfeld says modestly that his book is a "description only of those problems which I consider fundamental and which I hope will serve as an introduction to more extensive study." A reading of the table of contents appears to bear out this promise of a somewhat one-sided treatment of the subject. Professor Langfeld is primarily the psychologist, concerned largely with problems of the esthetic experience. Furthermore, it is as the instructor of the entirely uninitiated that he writes. His book is frankly elementary, painstakingly supplying definitions and elucidations of the simplest matters. For the most part it is clear and instructive though remarks on page 16 might well cause bewilderment even in those inured to the difficulties of the subject. On that page Professor Langfeld says that "Psychology must analyze the behavior of the observer in so far as the peculiar adjustment called 'aesthetics' is concerned"—which may of course be a misprint, but even at that would leave some things to be explained.

As an introduction to the definition of the "science" of esthetics and of the esthetic attitude, Professor Langfeld quotes from contemporary writings on the subject. He then briefly discusses the various arts to show what factors in them favor that attitude. Two chapters he devotes to the subject of empathy, and by citations from Karl Groos, Lipps, and Vernon Lee renders intelligible this "motor theory" of esthetic experience. Two chapters also he gives to "Unity," discussing first the psychological process by which unity is won out of diversity, and next its place in the various arts.

Again in two chapters he devotes himself to symmetry and balance, and finally he has a chapter on the Art Impulse in which he discusses some theories as to its origin.

An unusual feature of the volume is its plates. Many books of esthetic theory would be improved if they followed the example here set of including illustrations for direct elucidation of the text. For a just evaluation of the work as a whole one must keep strictly in mind its avowed scope and intention. It does not pretend to be either a complete history of theory, or an original piece of psychology. It serves its purpose.

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JOURNALS AND NEW BOOKS

PSYCHOLOGICAL REVIEW. Vol. 29, No. 6. Behavior versus Introspective Psychology: *S. W. Fernberger*. The Unique in Human Behavior: *H. N. Wieman*. Analyzed versus Unanalyzed Experience: *R. H. Wheeler*. What can Psychology Contribute to our Knowledge of the Mechanism of Mental Disorder?: *C. M. Campbell*. The Effect of Variations of the Intensity of the Illumination of the Perimeter Arm on the Determination of the Color Fields: *C. E. Ferree* and *G. Rand*. Types of Dextrality: *J. M. Rife*. The Significance of Neural Adjustment: *H. C. Warren*. The Affiliations of Behaviorism: *M. W. Calkins*.

STUDI FILOSOFICI E RELIGIOSI. Vol. III, Num. 3. Il significato di ypostasis in ad Hebr. I₃: *G. Furlani*. L'etica di Metodio d'Olimpo: *A. Biamonti*. S. Paolo negli Apologisti greci del III secolo, III: *M. Fermi*. Taziano e lo Gnosticismo: *M. Zappalà*.

PSYCHOLOGICAL BULLETIN. Vol. 19, No. 10. Perception: An Introduction to the Gestalt-Theorie: *K. Koffka*. No. 11. Abstracts of Periodical Literature.

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REVISTA DE FILOSOFÍA. Año VIII, No. VI. Doctrinas de Levy-Brühl: *A. N. Ponce*. Alejandro Venegas: *A. Donoso*. La Sociología de Francisco Ramos Mejía: *R. A. Orgaz*. Scalabrini y el comtismo: *V. Mercante*. La filosofía en el Ecuador colonial: *E. P. Barrera*. Las revoluciones francesa y rusa: *G. S. Moreau*. Evolución ideológica de Costa Rica: *L. F. González*. Por la Unión Latino-Americana: *J. Ingenieros*.

REVUE DES SCIENCES PHILOSOPHIQUES ET THÉOLOGIQUES. 11^{ème} Année, No. 4. Les Arguments de M. Einstein: *F. Vial*. La "ruine" des dantologues: *P. Mandonnet*. Bulletin de Philosophie Sociale. Bulletin d'Histoire de la Philosophie. Bulletin de Théologie Spéculative.

LOGOS. Anno V, Fascicolo 3-4. Il cammino della conoscenza filosofica: *Jakovenko*. La volatilizzazione di Dio: *Rensi*. Il problema delle azioni a distanza: *Ranzoli*. Le positivisme mystique de l'Inde: *Masson-Oursel*. Le antinomie della valutazione: *Della Valle*. Il sonno in psichiatria: *Epifanio*. La teoria di Einstein e il fenomenismo: *Guastella*. Bergson e lo spiritualismo francese del sec. XIX: *Serini*.

THE PSYCHOLOGICAL CLINIC. Vol. XIV, Nos. 5-6. The Analytical Diagnosis: *L. Witmer*. Miss Inconsistency: *A. M. Jones*. An Analytical Study of the Intelligence of a Group of Adolescent Delinquent Girls: *A. S. Starr*. The Increase of the Intelligence Quotient through Training: *G. G. Ide*. Children Applying for Working Certificates: *R. E. Leaming*. Eighteen Children from an Orthogenic Backward Class: *C. Easby*. Diagnostic Teaching: Albert—A Lazy Boy: *W. B. Stewart*. A Contrast in Efficiency: *H. W. Brown*.

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Morgan, Victor: *La Voie du Chevalier. Éducation Expérimentale par Soi-même*. Nîmes: Imprimerie Coopérative "La Laborieuse." 1922. xxxvii + 248 pp.

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Mumford, Lewis: *The Story of Utopias*. With an Introduction by Hendrik Van Loon. New York: Boni and Liveright. 1922. xii + 315 pp.

Phelps, William Lyon: *Human Nature in the Bible*. New York: Charles Scribner's Sons. 1922. xii + 333 pp.

Papers in Honor of Josiah Royce on his Sixtieth Birthday. Reprinted from Vol. XXV, No. 3 (May 1916), of *The Philosophical Review*. 294 pp.

Walston, Charles, (Waldstein): *Harmonism and Conscious Evolution*. New York: Macmillan Co. 1922. xvi + 463 pp. \$6.00.

NOTES AND NEWS

We give below the programme of the joint meeting of the Eastern and Western Divisions of the American Philosophical Association, which will be held at Union Theological Seminary, New York City, on December 27, 28, and 29, 1922. All sessions, except as otherwise indicated, will be held in Room 207. The public is invited to attend all morning and afternoon sessions of the Association, except the business meetings, which are for members only. The Smoker and Annual Dinner are for members of the Association and their guests.

WEDNESDAY, DECEMBER 27

9:30 A.M.

Obscurantism of Science *Harvey G. Townsend*
 The Metaphysics of Modern Scepticism *J. Loewenberg*
 The Metaphors of the Reason *H. B. Alexander*
 A Pragmatic Conception of the A Priori *Clarence I. Lewis*

3:00 P.M.

Paul Carus Lecture: Existence as Stable and as Precarious,
John Dewey

THURSDAY, DECEMBER 28

9:30 A.M.

The Moral Criterion in Plato *R. C. Lodge*
 Amor Dei Intellectualis *Morris R. Cohen*
 Origin and Value: The Unintelligibility of Philosophic Modernism,
Wilbur M. Urban

2:00 P.M.

Business Meeting of the Eastern Division (Room 207)
 Business Meeting of the Western Division (Room 307)

3:00 P.M.

Paul Carus Lecture: Existence, Ends, and Appreciation,
John Dewey

7:00 P.M.

(At the Commodore Hotel, West Ball Room)

The Annual Dinner of the Association

Welcome by President McGiffert

Address by the President of the Eastern Division:

The Problem of Progress *Walter G. Everett*

FRIDAY, DECEMBER 29

9:30 A.M.

Paul Carus Lecture: Existence, Means, and Knowledge,
John Dewey

10:30 A.M.

(In Room 207)

On an Inconsistency in Russell's Treatment of Mental Action,
G. Watts Cunningham

Giving a Name to Ignorance *Theodore de Laguna*The Mind-Body Impasse *Durant Drake*The Emergent Theory of Mind *G. T. W. Patrick*

10:30 A.M.

(In Room 307)

The Philosophy of Feeling in Current Poetics. *Katherine E. Gilbert*
 (Introduced by Walter G. Everett)

Philosophy and American Law *Philip L. Given*

The Rational Character of the Democratic Principle,
Marie Collins Swabey

Frequency of Practice *A. P. Brogan*

Papers are limited to twenty minutes, and comments on papers
 to ten minutes.

A limited number of copies of the Titchener Commemorative Volume are left in stock. Since the sales to date have more than paid the costs of the edition, the Committee in charge of publica-

tion have decided to offer these remaining copies to psychologists at the reduced price of two dollars, postpaid. The proceeds of their sale, together with the balance already in hand, will be funded, and the interest will presently be used to establish a prize for meritorious work in experimental psychology.

The volume, which consists of 337 pages of the style and size of the pages of *The American Journal of Psychology*, contains eighteen studies in various departments of psychology, dedicated to Professor Titchener by colleagues and former students on his completion of twenty-five years of service to Cornell University.

Orders may be sent to D. R. Knight, Morrill Hall, Cornell University, Ithaca, N. Y.

M. F. WASHBURN

W. B. PILLSBURY

K. M. DALLENBACH

The sixth semi-annual meeting of the Southwest Philosophical Association took place on Saturday, November 11th, at the University of Southern California. After a business session, in which it was decided to continue the present officers and to enlarge the scope of work and membership, a paper on "The Concept of Independence in the New Realism" was read by Dean Rieber of the University of California, Southern Branch, and also one on "The Knowledge of Other Minds" by Dr. Henry Nelson Wieman of Occidental College.

After a discussion of the papers, an executive committee was appointed to consider an enlarged scope for future activity of the society. This committee consists of Ralph Tyler Flewelling, University of Southern California, President; Henry Nelson Wieman, Occidental College, Secretary-Treasurer; Bernard C. Ewer, Pomona College; Dean C. H. Rieber of University of California, Southern Branch; and Dr. Carl S. Patton, Los Angeles.

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